



User Manual - Release 3.20

VSAM FILE TUNING, VSAM CATALOG DISPLAY, VTOC DISPLAY & MODIFICATION.



USERCAT	CBLV11 (3380)	TYPE	NRECS	PCNT	----	ALLOC	TRACKS	----	FRSP	LMAX	/
o	-----	----	-----	----	TOTAL	PRIME	SEC		CI	CA	----
o	ABC.TEST.FILE.B	KSDS	189	59.1	10	5	5	20	5	900	/
o		IX	3	** ALL**	1	1	1			3577	/
	*** SEV 3-06 ***	CA SPLITS TOO HIGH (1 PC OF INSERTS)									/
o	*** SEV 3-08 ***	CI SPLITS TOO HIGH (34 PC OF INSERTS)									/
	** SEV 2-04 **	BUFSP TOO SMALL FOR EFFICIENCY									/
	** SEV 2-11 **	INDEX CISIZE IS EXCESSIVE									/
o	** SEV 2-25 **	INEFFICIENT DATA CISIZE									/
	* SEV 1-10 *	IMBED COSTS 20 PC OF DATA SPACE									/
	* SEV 1-18 *	SEC EXTENTS EXIST									/
o	*** WARN 016 ***	LARGE ALLOC CHANGE									/
o	CBL TUNED										/
o	DATA (/
	CISZ (12288)										/
	CYLINDERS (1,1)										/
o	FREESPACE (32,10)										/
	BUFFERSPACE (26624)										/
	INDEX (/
o	CISZ (512)										/

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Contents

Documentation Notes.....	1
Summary of Changes.....	2
Introduced in Rel 9.8 (April 1997).....	2
Introduced in Rel 2.00 (May 2001).....	2
Introduced in Rel 2.10 (February 2004).....	2
Introduced in Rel 2.12 (January 2007).....	2
Introduction.....	3
General.....	3
The CBLVCAT Approach.....	3
The New User.....	4
MVS Execution.....	5
Caution.....	5
TSO Execution.....	5
VSE Execution.....	6
CMS Execution.....	7
Interactive Execution.....	8
Control Card Syntax Rules.....	10
Guide to List Output.....	11
Standard Reports.....	11
Introduction.....	11
Example 1. Standard Catalog Report.....	11
Notes.....	12
Example 2. Standard Catalog Report with OPTION.....	13
Notes.....	13
Example 3. VSAM Volume Summary.....	14
Notes.....	14
Example 4. VVDS Report.....	14
Notes.....	15
Example 5. ICF Volume Summary.....	15
Notes.....	16
Example 6. Standard VTOC Report.....	16
Notes.....	16
Example 7. Standard Label Report.....	17
Notes.....	17
Customised Reports.....	18
Introduction.....	18
Example 8. Basic Customised Report.....	19
Notes.....	19
Example 9. Selective Customised Report.....	19
Notes.....	20
Example 10. Advanced Customised Report.....	20
Notes.....	21
Example 11. Customised VVDS Report.....	21
Notes.....	22
Example 12. Combined VTOC Report.....	22
Notes.....	22
Example 13. Combined Catalog Report.....	22
Notes.....	23
Example 14. Combined Catalog and VTOC Report.....	23
Notes.....	24
Example 15. Combined VTOC Report for all VTOCs.....	24
Notes.....	24
Example 16. Combined Catalog Report for all Catalogs.....	24
Notes.....	25
Example 17. Combined Report for all Catalogs and VTOCs.....	25
Notes.....	25
Example 18. Free Space across all VTOCs.....	26
Notes.....	26
IDCAMS DEFINE and Reorganisation.....	26
Introduction.....	26
Supported File Types.....	27
Output File.....	27
Selection.....	27
Security Keywords.....	27
Warning Messages.....	27
IX Allocation.....	27
Installation Standards.....	27
Example 19. DEFINE without TUNE.....	29
Notes.....	29
Example 20. DEFINE with TUNE.....	29
Notes.....	30
Example 21. Skeleton Reorganisation Jobstreams.....	30

Contents

Guide to VSAM Tuning.....	33
Tuning Considerations.....	33
File Selection.....	33
Environment Selection.....	33
On-line and Batch files.....	33
Alternate Index Files.....	34
Database Files.....	34
Reusable Files.....	34
Average Record Length Estimation.....	34
Growth and Freespace.....	35
Tuning Output.....	35
Introduction.....	35
SEVerity Block.....	36
TUNE Block.....	37
CAPacity Block.....	40
JCL Override Block.....	41
Example 22. Increased Initial Load.....	42
Notes.....	42
Example 23. Limiting CI Size.....	43
Notes.....	43
Example 24. Conditioning Distributed FREESPACE.....	44
Notes.....	44
Example 25. Conditioning Absolute FREESPACE.....	45
Notes.....	45
VSAM Monitoring.....	46
Regular Monitoring.....	46
Fine Tuning.....	46
VSAM Modelling.....	47
Introduction.....	47
Example 26. Modelling a File.....	47
Notes.....	48
Example 27. Modelling for DASD Change.....	48
Notes.....	48
Summary of Syntax.....	50
REPORT Summary.....	50
Notes.....	50
OPTION Summary.....	51
Notes.....	51
LISTVCAT Summary.....	51
Notes.....	52
LISTVTOC Summary.....	52
Notes.....	52
LISTLABL Summary.....	52
Notes.....	52
VTOC Modification Summary.....	52
Notes.....	53
Other Commands.....	53
Notes.....	53
LISTVCAT Output Fields.....	53
Standard Catalog Report.....	53
Notes.....	53
Customised Catalog Report.....	54
Notes.....	54
LISTVTOC Output Fields.....	55
Standard VTOC Report.....	55
Notes.....	55
Customised VTOC Report.....	55
Notes.....	55
Abbreviations and Synonyms.....	56
Notes.....	56
A-Z Reference.....	57
! (Separator Character).....	57
* (Comment).....	58
ACCESSED (nn).....	58
Notes.....	58
ALIAS.....	58
ALLFILES=YES.....	59
ALLOC (nn).....	59
ALLOCP (nn).....	59
Notes.....	59
ALLOCS (nn).....	59
Notes.....	60
ALLOCT (nn).....	60
Notes.....	61
ALLOCU (nn).....	61

Contents

A-Z Reference

Notes.....	61
ALLOC3 (nn).....	61
Notes.....	62
ALLOC4 (nn).....	62
ASSOC.....	62
Note.....	62
ASSOC (nn).....	62
AVLRECL=nnn/KEEP.....	63
File Modelling.....	63
File Fragmentation.....	63
AVLRECL and Maximum Record Length.....	63
AVLRECL and MAXLRECL.....	63
AVRL.....	63
Note.....	63
AVRL (nn).....	63
BLKSIZE (nn).....	64
BLKSIZE (nn).....	64
BUFSP (nn).....	64
Notes.....	64
BUFSP/IXL (nn).....	64
Notes.....	65
CAT=xxx.xx.....	65
Notes.....	65
CATALOG (nn).....	65
Note.....	65
CBLCLINE=nn.....	65
Note.....	66
CBLVCALE=nn.....	66
Note.....	66
CBLVCALW=nn.....	66
Note.....	66
CBLVCEXT=nn.....	66
Notes.....	67
CBLVCFN=xxx.....	67
CBLVCONL=X'xx'.....	67
Notes.....	67
CBLVCONS=xxxx.....	68
CBLVCONT=nnnn.....	68
CBLVPCF=nn.....	68
CBLVPCPCT=nn.....	68
Notes.....	68
CBLVPCPV=nn.....	69
CBLVRCRM=nn.....	69
Notes.....	69
CBLVCSCA=nn.....	69
Note.....	69
CBLVCSCI=nn.....	69
Note.....	69
CBLVCSPA=n.....	69
Note.....	70
CBLVCSW1=X'xx'.....	70
CBLVCSW2=X'xx'.....	70
CBLVCSW3=X'xx'.....	70
CBLVCSW4=X'xx'.....	71
CBLVCSW5=X'xx'.....	71
CBLVCSW6=X'xx'.....	71
CBLVCSW7=X'xx'.....	72
CBLVCSW8=X'xx'.....	72
CBLVCSW9=X'xx'.....	72
CI/CA.....	73
CI/CA (nn).....	73
Note.....	73
CIMAX=nnnn.....	74
Notes.....	74
CIMIN=nnnn.....	74
Notes.....	74
CISIZE (nn) - REPORT VCAT.....	74
Notes.....	74
CISIZE (nn) - REPORT VTOC.....	74
Notes.....	75
CISIZE=KEEP.....	75
Notes.....	75
CISIZE=n1,n2.....	75
Notes.....	75
CLASS=n.....	75
COMPONENT (nn).....	75

Contents

A-Z Reference

Notes.....	76
COMPRESSED.....	76
CREATED (nn).....	76
Notes.....	76
CYL/HD (nn).....	76
CYLMAX=nnn.....	77
DDNAME=fname.....	77
Notes.....	77
DDNAME=fname.....	77
Notes.....	77
DEFINE.....	77
Notes.....	77
DEFINED (nn).....	78
Notes.....	78
DEFINED.....	78
Notes.....	78
DEL.....	78
Note.....	78
DEV=ALL.....	78
VSE systems.....	79
MVS systems.....	79
DEV=unitname.....	79
DEV=cuu.....	79
Notes.....	79
DEV=nnnn.....	80
DSN=xxx.xxx.xx.etc.....	80
Notes.....	80
DSN (nn).....	80
Notes.....	80
DSN (nn).....	80
Notes.....	81
EJECT.....	81
ENTRY (nn).....	81
Notes.....	81
EXCPS.....	81
EXP=PERM.....	82
Notes.....	82
EXP=TEMP.....	82
Notes.....	82
EXPD.....	82
Notes.....	83
EXPIRES (nn) - REPORT VTOC.....	83
Notes.....	83
EXPIRES (nn) - REPORT VCAT.....	84
Notes.....	84
EXT (nn).....	84
EXT-ADDR.....	85
EXTENDED.....	85
EXTNO=nn.....	85
FAIL=xxx.....	85
FREE.....	86
Note.....	86
FREEBYTES (nn).....	86
FREETAB.....	86
Notes.....	87
FRSP (nn).....	87
Notes.....	88
FRSPCA=nn.....	88
Notes.....	88
FRSPCI=nn.....	88
GDGDSN.....	88
Notes.....	89
GDGRPT (GDG repeat).....	89
Note.....	89
GGEN (nn) (GDG gen nos).....	89
GMAX (nn) (GDG max level).....	89
GROWTH=nn.....	90
Notes.....	90
GVER (nn) (GDG vers no).....	90
HEAD='string'.....	90
Notes.....	90
HIALLRBA (nn).....	90
HIBLK=nnnn.....	91
Notes.....	91
HICISZ=nnnn.....	92
HICYL=nnnn.....	92

Contents

A-Z Reference

HIDATE=date.....	92
Notes.....	92
HIEXP=date.....	92
Notes.....	92
HITRK=nnnn.....	93
HIUSERBA (nn).....	93
IGN=string.....	93
Notes.....	93
IMB.....	94
Notes.....	94
INDEX.....	94
INFO (nn).....	94
File Messages.....	94
Summary Messages.....	95
ISC.....	95
IXL (nn).....	96
KEY=string.....	96
Notes.....	96
KL (nn).....	97
KL/BLK/IMB (nn).....	97
Notes.....	97
LINESPACE=n.....	97
Notes.....	97
LIST=YES.....	98
Notes.....	98
LISTLABL.....	98
Notes.....	98
LISTVCAT.....	98
LISTVTOC.....	98
LMAX.....	99
Note.....	99
LMAX (nn).....	99
Notes.....	99
LOBLK=nnnn.....	99
LOCISZ=nnnn.....	100
LOCYL=nnnn.....	100
LODATE=date.....	100
Notes.....	100
LOEXP=date.....	100
LOTRK=nnnn.....	100
LRECL (nn).....	100
MAXLRECL=nnnn/KEEP.....	101
MERGE.....	101
Notes.....	101
MOD.....	101
Note.....	102
MOUNT.....	102
NEWDSN=xxx.xxx.xx.etc.....	102
Notes.....	102
NEWOWN=xxx.....	102
Notes.....	102
NEWVOL=xxxxxx.....	102
Notes.....	103
NOALIAS.....	103
NOASSOC.....	103
NODEFINE.....	103
NOEXPD.....	103
NOFREE.....	103
NOGDGDSN.....	104
NOGDGRPT.....	104
NOINDEX.....	104
Note.....	104
NOISC.....	104
NOMOUNT.....	104
Note.....	104
NOOVLAY.....	105
NOPCAP.....	105
NOPERM.....	105
Note.....	105
NOPJCL.....	105
NOPSEV.....	105
NOVOL.....	106
Note.....	106
NRECS (nn).....	106
Notes.....	106
NRECS=nnnn.....	106

Contents

A-Z Reference

NSEC (nn).....	106
Notes.....	106
OPTION.....	107
Notes.....	107
OVLAY.....	107
OWN=xxx.....	107
Notes.....	107
PAGEDEPTH=nn.....	108
Notes.....	108
PAGEWIDTH=nn.....	108
Notes.....	108
PASS=passwd.....	108
PCNT.....	108
PCNT (nn).....	109
Notes.....	109
PERM.....	109
PHYREC (nn).....	109
Notes.....	109
PRTCAP.....	110
PRTJCL.....	110
PRTSEV.....	110
QUERY.....	110
Notes.....	110
RAW=fname.....	110
Notes.....	111
RECDEL (nn).....	112
Notes.....	112
RECFM (nn).....	112
RECINP (nn).....	112
Notes.....	112
RECINS (nn).....	113
Notes.....	113
RECORDS=nnn.....	113
RECSTATS (nn).....	113
Notes.....	113
RECUPD (nn).....	113
Notes.....	113
REF=xxx.xx.....	113
Notes.....	114
REF=ALL.....	114
Notes.....	114
REPORT.....	114
Notes.....	114
SORT.....	114
RKP (nn).....	115
Notes.....	115
S/C.....	115
Notes.....	115
S/C (nn).....	115
SECALLOC=nn.....	115
Notes.....	115
SEV=n.....	116
Notes.....	116
SEVL (nn).....	116
Note.....	116
SHR.....	116
Notes.....	116
SHR (nn).....	116
SMS (nn).....	116
SMSD (nn).....	117
SMSM (nn).....	117
SMSS (nn).....	117
SORT=xxx.....	117
SORT.....	118
Note.....	118
SORTD.....	118
SPANNED.....	118
SPLIT=nn.....	118
Notes.....	118
SPLITCA (nn).....	118
SPLITCI (nn).....	119
SPLITS (nn).....	119
Notes.....	119
START (nn).....	119
STOPAFT=nnn.....	119
Notes.....	119

Contents

A-Z Reference

STRIPED.....	120
SUBSET.....	120
Notes.....	120
SUMMARY.....	120
Notes.....	120
SUMMARY.....	121
Notes.....	122
SYS=ALL.....	122
Notes.....	122
SYS=nnn.....	122
Notes.....	122
TIMESTMP.....	122
Note.....	123
TIMESTMP (nn).....	123
Notes.....	123
TOTALLOC=nnn.....	123
Note.....	123
TOTALS.....	124
Notes.....	124
TUNE (sys).....	124
Notes.....	124
TYPE (nn).....	125
Notes.....	125
TYPE (nn).....	125
Notes.....	125
TYPE=xxx.....	126
Notes.....	126
TYPE=xxx.....	127
Notes.....	127
UNALLOC=nnn.....	127
Notes.....	127
UNIT (nn) - REPORT VTOC.....	127
UNUSED.....	128
Notes.....	128
USED (nn).....	128
Notes.....	128
VCAT (nn).....	129
Notes.....	129
VOL=volser.....	129
Notes.....	129
VOL=volser.....	129
Notes.....	129
VOL=volser/vol*.....	129
Notes.....	129
VOLINFO.....	130
Note.....	130
VOL1 (nn).....	130
Notes.....	131
VOL2 (nn).....	131
Notes.....	131
VOL3 (nn).....	131
Notes.....	132
VOL4 (nn).....	132
Notes.....	132
VOL5 (nn).....	132
Notes.....	133
VOLUME (nn).....	133
Notes.....	133
VTOC (nn).....	133
Notes.....	133
VVDS=volser.....	133
Notes.....	134
XVSAM.....	134

CBLNAME.....	135
Introduction.....	135
CBLNAME Source Code.....	135
CBLNAME Licensing.....	135
Field Summary.....	135
Detailed Field Descriptions.....	137
QUERY CBLNAME.....	144

Messages.....	145
SEV Messages (Severity).....	145
Warning Messages.....	151
Error Messages.....	152

Contents

Messages

Console Messages.....	155
Expiry Warning.....	155
Error Messages.....	156
Wrong Volume.....	156
Miscellaneous Messages.....	156
Return Codes.....	156

Technical Information.....158

Installation.....	158
Introduction.....	158
The Distribution Material.....	158
The Operating Environment.....	158
System Components.....	158
CBLVCAT Build Level Information.....	159
System Considerations.....	159
Year 2000 Compliance.....	159
Tuning Principles.....	160
Approach to ALLOCATION.....	160
Approach to RECORDSIZE.....	161
Approach to DATA CFSIZE.....	161
Approach to INDEX CFSIZE.....	161
Approach to IMBED/REPLICATE.....	161
Approach to SPEED v RECOVERY.....	162
Approach to WRITECHECK.....	162
Approach to SHAREOPTION.....	162
Approach to SPANNED.....	162
Approach to FREESPACE.....	162
Approach to BUFFERSPACE.....	162
Tuning for IMS/DL1 Databases.....	163
IMS/DL1 Data Sets.....	164
IMS/DL1 Database Processing.....	164
Database Re-organisation.....	164
Buffer Pool Allocation.....	164
Additional VSAM Information.....	165
MIN-CA and MAX-CA.....	165
CASIZE.....	166
CFSIZE.....	166
SECONDARY ALLOCATION.....	167
IMBED v REPLICATE.....	168
FREESPACE.....	168
SPLITS.....	169
KEY COMPRESSION.....	170
ALTERNATE INDEX and PATH.....	170
LEVELS OF INDEX.....	171
BUFFER SPACE.....	172
SPEED v RECOVERY.....	174

Glossary of Terms.....175

Also from CBL.....180

SELCOPY the Productivity Aid.....	180
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Documentation Notes

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Summary of Changes

This section summarises those new features and changes included in CBLVCAT Release 2.12, which have incorporated into the body of this manual.

The previous edition of this manual, published in November 1996, documented CBLVCAT Release 9.7.

Note that changes and new features may be subject to alteration, at the discretion of CBL, according to advice and feed-back from users. CBL welcomes your new feature suggestions and requirements.

Introduced in Rel 9.8 (April 1997)

- Year 2000 Compliance resulting in changes to the following:
 - ◆ **All:** Standard Catalog Report layout.
 - ◆ **All:** Standard VTOC Report layout.
 - ◆ **All:** REPORT VCAT and REPORT VTOC fields.
 - ◆ **All:** LISTVCAT DD=ucat OPTION DEFINE.
 - ◆ **All:** SUBSET HDATE=/LODATE=/HIEXP=/LOEXP=.
 - ◆ **VSE:** MOD DEV=cuu DSN=xxx.. EXP=PERM.
 - ◆ **VSE:** MOD DEV=cuu DSN=xxx.. EXP=TEMP.
- **MVS:** CSA Storage above the line for ICF Catalogs.
- **All:** VSAM (non-ICF) LISTVCAT In-Storage Catalog (ISC) for Improved Performance.
- **All:** Local TIMESTMP for ICF and VSAM Catalog Reports.
- **All:** Variable-Length RRDS (VRDS) reporting.
- **All:** SUBSET TYPE=V and TYPE=M for VRDS selection.
- **ICF:** LISTVCAT VVDS=volser non-VSAM data set reporting.

Introduced in Rel 2.00 (May 2001)

- **All:** CBLNAME Extensions for CBLVCAT Date Range(s) & Password.
- **All:** EXPIRES (nn) for REPORT VCAT.
- **All:** UNIT (nn) for REPORT VTOC.

Introduced in Rel 2.10 (February 2004)

- **All:** 31-bit Addressability.
- **All:** CBLVCAT Build Level & Command -V for SYSLOG/SYSLST Display.
- **All:** Support for File Sizes > 4GB.
- **All:** LISTVCAT SUBSET Parameters
- **All:** REPORT VCAT EXT
- **All:** LISTVCAT CBLVCSW9=X'10' for TYPE Entries
- **All:** LISTVCAT CBLVCSW9=X'08' for Hex DEVICE Type
- **MVS:** LISTVTOC SUBSET TYPE=PDSE
- **MVS:** LISTVTOC REPORT TYPE: PDSE
- **MVS:** LISTVCAT KEY=xxx.xx Implied REF=xxx.xx.
- **VSE:** LISTVCAT CAT=xxx.xx & Dynamic Label.
- **All:** OPTION RAW=*fname* for all REPORT Fields.
- **VSE:** LISTLABL SYSNO & VOLUME Entries: *NO*
- **All:** LISTVCAT DEFINE parameters: MVS SMS Classes & VSE EXTRALARGEDATASET.
- **All:** OPT - abbreviation for OPTIONS.
- **All:** TY - abbreviation for TYPE.

Introduced in Rel 2.12 (January 2007)

- **All:** CBLVCAT Interactive Reports via the SELCOPY/i Interactive Environment.

Introduction

General

CBLVCAT is an indispensable utility for all VSAM users. Its Catalog and VTOC reports are clear, concise and legible. These reports highlight problem files and optionally contain tuning recommendations. This insulates you from the volumes of IDCAMS LISTCAT reports and hours of research and calculations which would otherwise be required to accomplish these tasks. In other words, CBLVCAT is your VSAM expert, or your VSAM experts servant. Here is what CBLVCAT will do for you:

Report

1. **ICF and VSAM Catalogs.**

You can display whole Catalogs, or just the files of interest. If the standard output does not suit, customise the report to display the required information. It is possible to report on multiple Catalogs in the same run and even produce a variety of reports of the same Catalog. Customised reports can be combined, even with VTOC reports, into a single listing and/or sorted. It is also possible, for ICF Catalogs, to report directly from a VVDS.

2. **VTOCs.**

Display your VTOCs in a very legible report. You can choose the sequence and/or a number of other options which let you control the report contents, including report merging.

3. **Label Information Area.**

VSE users can display their Partition, Class and Standard Labels in a concise readable report.

Tune

CBLVCAT optionally gives tuning recommendations for problem files. Optimally tuned files result in large savings in processing power, elapsed run time, response time and disk space. It can also tune files based on different operating systems or DASD. This makes it ideal for planning and facilitating a migration.

Monitor

Your periodic reports may be restricted to files that need attention. These reports will save your time, because you won't be dealing with mounds of paper and/or masses of irrelevant information.

IDCAMS DEFINE Parameters

You can optionally punch card images of a DELETE/DEFINE deck, with or without tuning recommendations.

VTOC Modification

If you run **VSE** you can modify file expiry dates and rename, or delete, files.

The CBLVCAT Approach

The philosophy behind the **CBLVCAT** approach is **simplicity**:

Installs Easily

If you are a first time user, just follow the Installation Guide for your type of system and you will be operational very quickly. Later, you can tailor the **CBLNAME** module to suit your environment and select default preferences for reporting. If you are already a user, or if you use another CBL product, installation is even faster.

No Hooks into Your System

CBLVCAT is risk free. It will not require you to make any system software changes and won't hinder any future software upgrades.

Easy to Use

The control records, used to direct **CBLVCAT**, are free-format. You can be as general, or specific, as you like, when selecting the files to appear on your reports. A standard report format is provided, which contains the most frequently used information. If you prefer, you can create your own report format, choosing both the fields and the order in which they are displayed.

You Still Control Your Own System

Tuning recommendations and warning indicators are given, but **no changes** are made behind the scenes.

Speed of Execution

CBLVCAT is written in Assembler Language and reads Catalogs directly. Its speed is astonishing, allowing reports to be produced in prime-time.

Portable

CBLVCAT is not operating system dependent. If you decide to change, simply re-install it on the new system.

The New User

Job Control Language

You do, of course, have to supply **Job Control Language (JCL)** statements, to both invoke CBLVCAT and to link the files, mentioned in the CBLVCAT control statements, with **real physical data** stored on a computer readable medium. This JCL is operating system dependent and is described later. However, the CBLVCAT control statements used in this section are all operating system independent.

Reports

A standard report of the default Catalog can be produced by simply using the following CBLVCAT command:

```
LISTVCAT
```

A report of a specific Catalog is produced with the following:

```
LISTVCAT DDNAME=mycat
```

For a standard VTOC report of the volume with VOLID abcvol, use:

```
LISTVTOC VOL=abcvol
```

In both types of report any file attributes needing attention are highlighted (either with asterisks or plus signs).

For VSE users, a standard report of the Label Information Area is produced as follows:

```
LISTLABL
```

Abbreviations

Most CBLVCAT commands can be abbreviated to save time and space (See [Summary of Syntax](#) for a full list). e.g.

```
LC DD=mycat          * Abbreviation for LISTVCAT.
LV VOL=abcvol        * Abbreviation for LISTVTOC.
```

Selective Reporting

So far, the reports produced would have contained all the files within a particular Catalog/Volume. Most of the time you will probably only be interested in a particular file, or set of files. The **SUBSET** parameter, together with its associated sub-parameters, designates which files appear in the report (See [Summary of Syntax](#) for sub-parameter details). e.g.

```
LC DD=mycat SUBSET TYPE=K * KSDS entries only.
```

Multiple **SUBSET** sub-parameters are allowed. They are processed as a logical **AND** i.e. cumulative (**KEY** and **IGN** are exceptions, being processed as a logical **OR**.)

The **SUBSET** parameter is only effective for the operation on which it is coded and the word **SUBSET** is optional.

Tuning

If the **TUNE** parameter is specified, CBLVCAT will add its tuning recommendations to the Catalog report. CBLVCAT doesn't make the changes, it lists the IDCAMS DEFINE parameters requiring modification and comments on the changes required. e.g.

```
LC DD=mycat TYPE=K TUNE * KSDS only with tuning recommendations.
```

The **TUNE** parameter is only effective for the **LISTVCAT** command on which it is coded.

Report Customisation

If the standard report layout and/or contents don't suit your requirements, you can customise the output. This is accomplished using the **OPTIONS** or **REPORT** commands, together with their associated parameters. Multiple parameters are allowed (See [Summary of Syntax](#) for parameter details). The selected **OPTIONS/REPORT** parameters remain in force for the rest of the run, or until reset by another **OPTIONS/REPORT** parameter.

OPTIONS alters the content of the standard report. e.g.

```
OPTIONS LMAX          * Display LMAX instead of AVRL.
LC DD=mycat
```

This would create a report with maximum record length **LMAX** displayed in place of the average record length **AVRL**.

OPTION can also be supplied as a parameter to a **LISTVCAT** or **LISTVTOC** command (see **OPTION** in the [A-Z Reference](#)).

REPORT creates a totally customised report. Each parameter specifies a column to appear in the report. e.g.

```
REPORT VCAT DSN TYPE NRECS * Define the report layout.
LC DD=mycat
```

This would produce a customised Catalog report containing headings in the order specified, i.e. **DSN** (Data Set Name), **TYPE** File Type (e.g. KSDS) and **NRECS** the number of records in that file .

The **MERGE** and **SORT** parameters may be used, in conjunction with the **REPORT** command, to combine multiple listing into one report and to sort the output. (See [Guide to List Output](#) for examples of report customisation).

MVS Execution

Catalog Reports

Under MVS batch, CBLVCAT has two methods for producing a Catalog report (See also [TSO execution](#)). These are as follows:

1. Reference the required Catalog using a **DDNAME**. e.g.

```
//STEP1    EXEC PGM=CBLV
//UCAT     DD DSN=vsam.user.cat,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
LC DD=UCAT      TYPE=K      TUNE
```

2. Reference the required Catalog using the **REF** parameter (REfERENCE). The argument of this parameter can be the Catalog itself (using the self-defining entry), its alias, or any DSN in the Catalog. If **REF=ALL** (ICF with DFP 3.1 or higher) is used, a report is produced for all Catalogs. e.g.

```
//STEP1    EXEC PGM=CBLV
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
LC REF=any.file.in.cat      TYPE=K      TUNE      DEV=3390
```

Caution

Pre **DFP 3.1** users should supply a **STEPCAT/JOB**CAT to process ICF Catalogs. Contact CBL should this prove to be inconvenient.

For processing non-ICF VSAM Catalogs a **STEPCAT/JOB**CAT **must** be supplied. In addition, **before** running CBLVCAT for the first time on these Catalogs, it is advisable to run **IDCAMS VERIFY** first, otherwise, CBLVCAT may not be able to report on all files.

VTOC Reports

Under MVS batch, CBLVCAT has three methods for producing a VTOC report. These are as follows:

1. Reference the required Volume using a **DDNAME**. e.g.

```
//STEP1    EXEC PGM=CBLV
//VOL1     DD VOL=SER=volser,UNIT=3390,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
LV DD=VOL1
```

2. Reference the required Volume using the **VOL** parameter with the required Volume Serial number as the argument. The argument of the **VOL** parameter can also be a generic subset. For instance, **VOL=ABC*** will produce VTOC information for all volumes starting with ABC). e.g.

```
//STEP1    EXEC PGM=CBLV
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
LV VOL=volser
```

3. Reference the required Volume using the **DEV** parameter. The argument of this parameter is a user-defined esoteric group of units (generic subset). If **DEV=ALL** is used, a report is produced for all disk devices identified within SYSALLDA. e.g.

```
//STEP1    EXEC PGM=CBLV
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
LV DEV=3380DASD
```

Input via the PARM Field

For both Catalog and VTOC reports, CBLVCAT can take its input via the **PARM** field of the EXEC statement. e.g.

```
//STEP1    EXEC PGM=CBLV,PARM='LV VOL=volser'
//SYSPRINT DD SYSOUT=*
```

TSO Execution

To simplify the production of Catalog/VTOC reports, the **V TSO** REXX exec is provided. It is supplied on the distribution tape and will have been made available to you as part of the installation procedure (see separate CBLVCAT installation guide).

The control statements for producing Catalog and VTOC reports are described under their relevant headings, and the various methods of supplying these statements to V TSO are described below under the heading "Invoking V TSO".

Catalog Reports

Authorisation to read a Catalog, needs to be set via an **AUTHCMD** entry within module **IKJTSO00**.

Under TSO, CBLVCAT has two methods for producing a Catalog report as follows:

1. Reference the required Catalog using the **DDNAME**. e.g. parameter (This method requires an **ALLOC** statement to have been issued for the required Catalog). The CBLVCAT control statement uses the **ALLOC** name as the argument of the **DDNAME** parameter. e.g.

```
LC DD=UCAT TYPE=K TUNE
```

2. Reference the required Catalog using the **REF** parameter. The argument of this parameter can be the DSN of the Catalog itself (using the self-defining entry), its alias, or any DSN in the Catalog. If **REF=ALL** (ICF with DFP 3.1 or higher) is used, a report is produced for all Catalogs. e.g.

```
LC REF=any.file.in.catalog
```

VTOC Reports

Under TSO, CBLVCAT has three methods for producing a VTOC report. These are as follows:

1. Reference the required Volume using the **DDNAME** parameter (This method requires an **ALLOC** statement to have been issued for the required Volume). The CBLVCAT control statement uses the **ALLOC** name as the argument of the **DDNAME** parameter. e.g.

```
LV DD=VOL1
```

2. Reference the required Volume using the **VOL** parameter with the required Volume Serial number as the argument. The argument can also be a generic subset (for instance, **VOL=ABC*** will produce VTOC information for all volumes starting with ABC). e.g.

```
LV VOL=volser
```

3. Reference the required Volume using the **DEV** parameter. The argument of this parameter is a user-defined esoteric group of units (generic subset). If **DEV=ALL** is used, a report is produced for all disk devices identified within SYSALLDA. e.g.

```
LV DEV=3380DASD
```

Invoking V TSO

Before invoking **V TSO**, it is necessary to tailor it to include the name of the PDS to which you require output to be directed (The line to tailor is indicated within the exec). The methods of invoking **V TSO** are as follows:

1. **V**
If the exec is invoked with no parameters, CBLVCAT takes its control records from the terminal and directs its output to the PDS member 'VLST' (The PDS name should have already been tailored in the exec).
2. **V inarg**
The first parameter supplied to **V TSO** is the input location. This can either be 'TERM' (default), where control records are input from the terminal, or a PDS member which contains control records (The PDS name should have already been tailored in the exec).
3. **V inarg outarg**
The second parameter supplied to **V TSO** is the output location (the input parameter must also have been supplied, or '.' entered to use the default). This can either be 'TERM', where output is directed to the terminal, or the PDS member name of your required output file (The PDS name should have already been tailored in the exec). If this parameter is omitted, output defaults to the PDS member 'VLST'.
4. **V (inarg) DEST=xyz SYSOUT=x**
The **DEST=** and/or **SYSOUT=** parameters can be used to control the output location. They are not positional but must be coded with their arguments following. They cannot be used if the output argument has been specified.

VSE Execution

Catalog Reports

As with all VSAM processing, if a label definition (DLBL) for IJSYSCT does not exist in the System Standard Label Area, one must be supplied as a User-label.

Under **VSE/SP 2.1** or higher, all that is required is to point CBLVCAT to any existing Standard or User DLBL which refers to the required catalog. e.g.

```
// EXEC CBLV
LC DD=UCATWK1          * Standard label assumed.
/*
```

or

```
// DLBL MYCAT, 'any.user.catalog',,VSAM
// EXEC CBLV
LC DD=MYCAT
```

```
/*
```

Under earlier releases of VSE, the DLBL must contain a **CAT** operand with the argument equal to the DLBL frame. e.g.

```
// DLBL CBLCAT, 'my.user.cat',, VSAM, CAT=CBLCAT
// EXEC CBLV
// LC DD=CBLCAT
/*
```

VTOC Reports

Under VSE, CBLVCAT has three methods for producing a VTOC report. These are as follows:

1. Reference the required Volume indirectly using the **SYS** parameter with a temporary or permanently assigned programmer logical unit number as the argument. If **SYS=ALL** is used, a report is produced for all currently assigned disk devices.
2. Reference the required Volume indirectly using the **DEV** parameter with the required device number as the argument. If **DEV=ALL** is used, a report is produced for all active disk devices.
3. Reference the required Volume directly using the **VOL** parameter with the required Volume Serial Number as the argument. The argument of the **VOL** parameter can also be a generic subset. For instance, **VOL=ABC*** will produce VTOC information for all volumes starting with ABC. e.g.

```
// EXEC CBLV
// LV SYS=3          * Assignment to SYS003 required.
// LV DEV=141        * Volume on device 141.
// LV VOL=DOSRES     * Volume DOSRES.
/*
```

Standard Label Reports

Partition (temporary and permanent), Class and System labels are listed with one command. e.g.

```
LISTLABL          * No parameters needed
```

Input via the PARM Field

For both Catalog and VTOC reports, CBLVCAT can take its input via the **PARM** field of the EXEC statement. e.g. (Std label for IJSYSCT exists.)

```
// EXEC CBLV, PARM='LC DD=IJSYSCT'
```

Operator Console Execution

One approach is to gain access to a partition, by releasing a **PAUSE job** (e.g. R RDR, PAUSEBG) into the relevant partition. A DLBL/ASSGN for the required Catalog/Volume should then be supplied and CBLVCAT invoked as follows:

```
// EXEC CBLV
```

CBLVCAT recognises that it has been initiated from the console and prompts you to enter control records. At this point, you reply with the required operation. e.g.

```
LC DD=IJSYSUC
```

When there are no more control records to enter, reply by entering a **"/"**, or a null reply ("end-of-block" or ENTER).

PLEASE NOTE

If you are running VTOC reports from the console and the operation fails, the default CANCEL action of the **FAIL** parameter is changed to **IGNORE**.

CMS Execution

To simplify the production of Catalog/VTOC reports for your attached VSE mini-disks, the **V EXEC** is provided. It is supplied as part of the CBL products distribution material and will have been made available to you as part of the installation procedure (see the "CBL Software Install Guide for VM/CMS and VM/VSE Systems").

In order to generate Catalog reports from CMS, IBM product "VSE/VSAM for VM" must be installed.

As with all VSAM processing, if a label definition (DLBL) for the Master Catalog (IJSYSCT) doesn't exist, one must be supplied and the disk on which it resides must be accessed. It is then necessary to supply similar information for all required disks and Catalogs. e.g. Assuming the Master Catalog is on Volume 140 and the required Catalog and VTOC are on Volume 141.

```
CP LINK userid 140 140 RR
ACC 140          M
ASSGN SYSCAT M
DLBL IJSYSCT M DSN vsam.master.catalog ( SYSCAT
CP LINK userid 141 141 RR
ACC 141          N
ASSGN SYS001 N
DLBL CBLCAT N DSN my.user.cat          ( SYS001
DLBL CBLCAT N DSN my.user.cat          ( SYS001 CAT CBLCAT
```


As can be seen above, when the **CAT** operand is specified, it is mandatory that the **DLBL** which is referenced by the argument of that **CAT** operand should have been previously defined. The argument of the **CAT** operand must be the same as the **DLBL** frame. There are **only two exceptions** to this rule:

1. If IJSYSUC (Job Catalog) is used as the **DLBL** frame, the **CAT** operand can be omitted as its default is IJSYSUC.
2. If IJSYSCT (Master Catalog) is used as the **DLBL** frame and no Job Catalog exists, the **CAT** operand may be omitted as, in this case, its default becomes IJSYSCT.

PLEASE NOTE

If IJSYSCT is used as the **DLBL** frame and a Job Catalog (IJSYSUC) already exists, the **CAT** operand **must** be specified with the argument IJSYSCT.

The control statements for producing Catalog and VTOC reports are described under their relevant headings, and the various methods of supplying these statements to V EXEC are described below under the heading "Invoking V EXEC".

Catalog Reports

Under CMS, a CBLVCAT control record references a Catalog using the **DDNAME** parameter. The argument of this parameter is the frame specified in the **DLBL**. e.g. Referencing the Catalog defined on the **DLBL** with frame CBLCAT (as defined above).

```
LC DD=CBLCAT
```

VTOC Reports

Under CMS, CBLVCAT produces a VTOC report using the **SYS** parameter. The argument of the **SYS** parameter is the logical unit number specified on the **ASSGN** statement. e.g. Referencing the Volume defined on the **ASSGN** statement as SYS001 (as defined above).

```
LV SYS=001
```

Invoking V EXEC

The **V EXEC** always runs with **DOS ON**, with 3 different methods of invoking it:

1. EXEC V

If the user simply invokes the EXEC with no parameters, CBLVCAT control records are entered on the control line after **VM READ** is displayed.

Output is to **V LISTING A**. Thus:

```
EXEC V #LC DD=IJSYSCT #LV SYS=001#
```

executes the parameters supplied between the **line end** characters ("#").

2. EXEC V fn

The parameters are executed from the user control file **fn CTL ***. Output is to **fn LISTING A**.

3. EXEC V fn ft fm

The parameters are executed from the user control file **fn ft fm**. Output is to **fn LISTING A**.

Interactive Execution

In addition to standard batch execution, CBLVCAT may be executed interactively on any of the mainframe platforms on which CBLVCAT is supported using the SELCOPY/i Interactive Environment.

SELCOPY/i is provided in the CBL Software Products bundle for each operating system and is installed and configured together with CBLVCAT as part of the standard installation procedure. zSeries machines on which CBLVCAT is licensed, are also licensed to run SELCOPY/i and so should be made available to all users.

```

-CBLLe
File Edit Actions Options Utilities Window SwapList Help      wS wR
-Execute CBLVCAT
View Back Forward FDB Edit Raw Refresh Help
Command>
VCAT Command> listcat key=nbj.cblidemo.v0000.ksds tune growth=0 avlrecl=
> 2452 define
VCAT Program> V212
-----SysPrint-----
1CBLVCAT REL 2.12 AT CBL - Bridgend UK (Internal Only)
-----
listcat key=nbj.cblidemo.v0000.ksds tune growth=0 avlrecl=
2452 define
-----
ICF CAT CBLMCT (3390)  TYPE          NRECS      PCNT      ---- ALLOC TRACKS ----  FRSP
-----          -----          -
TOTAL      PRIME      SEC
-----
NBJ.CBLIDEMO.V0000.KSDS
                                KSDS              500      24.9      84      21      7*4
                                VOL1=CBLM05
                                IX              13      39.4      1      1
                                VOL1=CBLM05
*** SEV 3-06 *** CA SPLITS TOO HIGH (8 PC OF INSERTS)
*** SEV 3-08 *** CI SPLITS TOO HIGH (30 PC OF INSERTS)
** SEV 2-19 ** SE
** SEV 2-25 ** IN
** SEV 2-27 ** TU
* SEV 1-15 * 3
* SEV 1-22 * SP
*** WARN 016 ***
CBL TUNED
Line 1 of 90 | Col 1 of 13
-CBL.CMX(TUNED) 72 F SEQ Size=134 Alt=2,2-
Command>
|...+...1...+...2...+...3...+...4...
00023 DEF CLUSTER (NAME (NBJ.CBLIDEMO.V0000.KSDS)
00024 INDEXED
00025 BUFFERSPACE ( 24576)
00026 /* BUFFERSPACE ( 12288)
00027 RECORDSIZE ( 2452, 4089)
00028 /* RECORDSIZE ( 1024, 4089)
00029 SPEED
00030 STORAGECLASS (CBLDFLT )
Te | Line=23 | Col=1 | Alt=2,2;2 | Size=134 | Recl=72 | Fmt=F | Files=2 | Views

```

Figure 1. SELCOPY/i CBLVCAT Interactive Window & DEFINE Output.

The CBLVCAT Interactive (VCI) component of SELCOPY/i allows interactive execution of CBLVCAT control statements sourced from a data set or via a command line. The generated report is stored in internal buffers and presented to the user in a window area with coloured highlighting.

The report window supports prefix area commands for each list entry allowing subsequent copy, edit, delete, IDCAMS LISCAT, etc. of a file in CBLVCAT the report output. The report itself may be also edited and optionally saved to an MVS data set, VSE LIBR member or CMS file.

In addition to the traditional CBLVCAT report, a list window may generated containing **all** of the LISTVCAT/LISTVTOC REPORT fields available for customised report output.

Where LISTVCAT option DEFINE is specified, an edit window is automatically opened for the CBLVCAT generated IDCAMS DEFINE job so allowing alteration by the user before it is submitted to batch.

In addition to CBLVCAT execution, SELCOPY/i supports many other tools and facilities, such as a function rich text editor, file search tools and list windows, thus providing users with a powerful working environment.

SELCOPY/i and CBLVCAT Interactive are documented at length in the "**SELCOPY/i Reference and User Guide**" and "**CBL Text Editor**" manuals which are freely available from the [CBL web site](#).

Control Card Syntax Rules

1. If input is via the **PARM** field of the EXEC statement, then **SYSIN/SYSIPT** is ignored.
2. If input is via **SYSIN/SYSIPT**, columns 1 to 71 are used by CBLVCAT and may contain data or comment, column 72 must be left blank and columns 73 to 80 may contain sequence numbers, or any other data the user wishes. CBLVCAT's commands and/or parameters may contain any number of intervening blanks.
3. If input is via in-stream **SYSIN/SYSIPT**, users of **VSE**, **CMS/DOS**, **TSO**, and **CMS (VM/ESA 1.2.1 or later)** must code a **/*** control statement to signify end of control card statements. Users of **CMS (VM/ESA 1.2 or earlier)** may use a **/*** or a **null line**, whereas native **MVS** users may omit this statement altogether.
4. If not already processed by the operating system, a **/*** in positions 1 and 2, followed by a blank, is taken as End-of-File by CBLVCAT, regardless of the rest of the record and regardless of the operating system. CBLVCAT's control card input file, **SYSIN** for **MVS** and **CMS**, **SYSIPT** for **DOS**, is then **closed**, without attempting to read any further control cards.
5. It is sometimes irritating to have to use a whole record for a single control statement. To overcome this, a **separator character** may be used to split a control record into logical control records (A separator character immediately followed by **/*** indicates End-of-File). The **default** separator character is the **"Exclamation Mark"** (X'5A'), but this default may be modified by an entry in the **CBLNAME** module (See that chapter for more details).
6. A CBLVCAT operation consists of a command followed by any number of associated parameters and sub-parameters (See **Summary of Syntax** for a full list).

- ♦ **LISTVCAT** and **LISTVTOC** are examples of commands.
- ♦ **DDNAME** and **REF** are examples of parameters.
- ♦ **LMAX** and **TYPE** are examples of sub-parameters.

A command must start on a new logical record. The parameters and sub-parameters which follow, belong to the operation started by that command. An operation is completed as soon as the next command, or end of file on **SYSIN/SYSIPT**, is detected. There can be more than one command per execution.

Commands and parameters may be supplied in mixed case characters. CBLVCAT converts all input to upper case.

7. There is no continuation character. Commands and parameters may be specified on more than one record (The two exceptions are the **LISTLABL** and **QUERY** commands, which must be complete on one logical record), but commands, parameters and strings cannot be broken in the middle.
8. Comments are allowed. An asterisk, which is not part of a quoted literal string, signals the start of a comment. All data following the asterisk is treated as comment. An entire record may be used as a comment line by coding an asterisk as the first non-blank character, or the entire control record may be left blank.
9. Some parameters are in **KEYWORD=string format**. CBLVCAT treats the equal-sign as a blank, which allows the substitution of one or more blanks in its place.

If a string contains blanks, commas or asterisks, it must be enclosed in single quotes. If it includes a quote, the quote must be represented as two quotes. e.g.

```
MOD DSN='FILE ID' NEWDSN='THIS IS 'A' FILE'
```

Guide to List Output

This chapter illustrates and explains the output from CBLVCAT if the **TUNE** parameter is not specified. (See also [Guide to VSAM Tuning](#)). However, **TUNE** is mentioned in section [IDCAMS DEFINE and Reorganisation](#) of this chapter to illustrate its use in conjunction with **DEFINE**.

Chapter [Summary of Syntax](#) contains a full list of all functions and their associated parameters and sub-parameters.

Detailed descriptions of functions, parameters and sub-parameters in alphabetical order, are available in chapter [A-Z Reference](#)

Standard Reports

1. [Introduction](#)
2. [Example 1 - Standard Catalog Report](#)
3. [Example 2 - Standard Catalog Report with OPTIONS](#)
4. [Example 3 - VSAM Volume Summary](#)
5. [Example 4 - VVDS Report](#)
6. [Example 5 - ICF Volume Summary](#)
7. [Example 6 - Standard VTOC Report](#)
8. [Example 7 - Standard Label Report](#)

Introduction

CBLVCAT has a standard report format which contains the most frequently required file information. Some columns of this report can display different fields depending upon the installation defaults and/or the run time options chosen. **OPTION** parameters can also be used to control the page geometry.

Example 1. Standard Catalog Report

A more readable replacement for an IDCAMS LISTCAT report (for ICF or VSAM catalogs), which is produced in a fraction of the time. The important data-component information is contained on **one line only**. Access to additional Catalog information is achieved either via the customised **REPORT** feature, or by using **OPTION** to alter the standard report content. Both these methods are shown in later examples.

e.g. List the Catalog identified by the DDNAME **CBLV91**.

```
LC DD=CBLV91
```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales										(OS)	VM/CMS=VMNB	12.24 FRI 26 JUN 2009	PAGE 1		
** VMXVFULL CTL M ***										LEVEL 002 +++ 97/08/04 14:04:18				*id *	
listvcat ddname=CBLV01															
USERCAT	CBLV01 (3350)	TYPE	NRECS	PCNT	----	ALLOC	TRACKS	----	FRSP	LMAX	KL,RKP	CISIZE	BUFSP	EXCPS	TIMESTAMP
					TOTAL	PRIME	SEC		CI CA		/BLK/IMB		/IXL		
CBL.VSAM.CATALOG		KSDS	57	35.2	12	12	3			505	44,0	512	3072	7172	2007/02/07 16.25.38
		IX	3	3.6	3	3	3			505	--IMB--	512	IXL=2	460	
CBL.TEST.ABCD.CATALOG		KSDS	13	27.1	2	2	0*			512	45,10	2048	6144	365	2007/02/17 19.06.12
		IX	1	12.5	1	1	0*			2041		2048		335	
CBL.TEST.ABCD.CATALOG2		KSDS	13	27.1	2	2	0*			512	45,10	2048	6144	6	2007/02/23 23.57.58
		IX	1	12.5	1	1	0*			2041		2048		6	
CBL.TEST.VVDS		ESDS	7	6.3	2	2	0*			400V		2048	4096	283	2007/02/17 19.05.42
CBL.TEST.VVDS2		ESDS	7	6.3	2	2	0*			400V		2048	4096	4	2007/02/23 23.42.38
EG.OF.LOW.BUFSP.HIGH.IXCISIZE		KSDS	401	33.5	C=2	C=1	C=1	25 20		800	4,0	4096	12288*	275	2007/11/09 00.55.09
		IX	3	75.0	1	1	1			4089		+4096+	IXL=2	145	
FILE.CREATED.BY.XYZ3		RRDS	2	20.0	1	1	1			1200		3072	6144	4	2007/11/08 21.29.49
NO.SEC.ALLOC.1		KSDS	5	3.2	10	10	0*			1017	4,0	2048	6144	9	2007/11/09 01.09.34
		IX	1	12.5	1	1	0*			2041		2048		5	
PRIME.SPACE.TEST.FILE		ESDS	25	** ALL**	1	1	1			300V		1024	2048	6	2007/11/02 16.57.20
SQ2051.TEMP.TEST.FILE		ESDS	1	3.8	1	1	1			2000V		512	SPANNED	4	2007/12/12 17.07.24
STUVE.TEST.FILE		ESDS	17	7.5	1	1	1			120V		512	1024	28	2008/02/22 09.36.06
STUVK.TEST.FILE		KSDS (R)	5	2.1	1	1	1			100V	7,8	1024	3072	82	2008/07/19 05.49.06
		IX	1	6.7	1	1	1			1017		1024		32	
SPACE.TEST.FILE		RRDS	17	**85.0**	2	1	1			1200		3072	6144	37	2008/02/22 07.49.39
XYZ1.KSDS.FILE		KSDS (R)	1	0.1	10	10	0*			17	5,10	1024	3584	10	2007/11/08 21.41.01
		IX	1	9.1	1	1	0*			1529		1536		7	
XYZ2.ENTRY.SEQ		ESDS	7	0.7	20	20	0*			2038V		2048	4096	8	2007/11/08 21.50.58
XYZ4.EXAMPLE.1		ESDS	2472	76.6	16	8	8			800V		4096	8192	31	2007/11/09 00.05.15
XYZ4.FILE		KSDS	1	3.2	2	2	0*			1017	5,0	2048	6144	4	2007/11/09 01.03.37
		IX	1	12.5	1	1	0*			2041		2048		4	
XYZ8.KSDS.FILE		KSDS (R)	6	0.1	10	10	0*			17	5,10	1024	3584	7	2007/11/09 01.33.02
		IX	1	9.1	1	1	0*			1529		1536		4	
XYZ9.KSDS.FILE		KSDS (R)	6	0.1	10	10	0*			17	5,10	1024	3584	8	2007/11/09 01.17.46
		IX	1	9.1	1	1	0*			1529		1536		5	
					---	---	---								
					177	138	52								
					---	---	---								

Example: Standard Catalog Report (CBL Ref: vmxvfull)

Notes

- SPANNED** is a non-standard message appearing in the **BUFSP/IXL** column, indicating that the file is defined with the SPANNED attribute.
- IMB--** in the **KL,RKP/BLK/IMB** column, indicates that the file was defined with the IMBED attribute.
- A **V** suffix on the **LMAX** value, indicates that the loaded records are of variable length.
- IXL=n** in the **BUFSP/IXL** column, indicates the number of index levels.

To enable easy **monitoring** of file condition, CBLVCAT also displays warning indications (*,+) when various, user controlled, threshold values are exceeded. This allows corrective action to be taken before serious problems occur. The warnings in this example are as follows:

- PCNT (** ALL **)**
All primary space is used and file additions will cause secondary allocations.
- PCNT (**nn.n**)**
The file full percentage threshold has been reached - default 85% (See CBLNAME option **CBLVPCPF**).
- CISIZE (+nnnnn+)**
Excessively large index **CI** size).
- SEC (0*)**
No secondary allocation defined (Highlighted as the file cannot be expanded).
- BUFSP (nnnnn*)**
The defined **Bufferspace** is too small.

Example 2. Standard Catalog Report with OPTION

OPTION can be used to control, among other things, the page geometry and the content of the standard report. It is applicable to both **LISTVCAT** and **LISTVTOC** operations, with parameters which relate specifically to the two different commands, as well as common parameters.

e.g. Using **OPTION** to display non-default report fields of the Standard Report.

```
OPTION    UNUSED  AVRL  CI/CA  S/C  DEFINED      * Non-default options.
LC      DD=CBLV10
```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales														(OS)	VM/CMS=VMNBJ			12.38 FRI 26 JUN 2009			PAGE	1
OPTION UNUSED AVRL CI/CA S/C DEFINED * Non-Default options																						
LISTVCAT DD=CBLV10																						
USERCAT CBLV10 (3380)	TYPE	NRECS	----- ALLOCATED		TRACKS	-----	FRSP	AVRL	KL,RKP	CISIZE	BUFSP	CI/CA	DEFINED									
			TOTAL	UNUSED	PRIME	SEC	CI CA		/BLK/IMB	/IXL												
TEST.GRP1.USER.CATALOG	KSDS	34	87	84	87	3		505	44,0	512	3072	92	2007/08/10									
	IX	3	3	2	3	3		1	--IMB--	1024	IXL=2	31										
DEFAULT.MODEL.ESDS.SAM	SAM (R)	0	TEMP		1	1		4100	4100	4608	9216	9	2007/08/13									
PRODUCT.FS.HIST.NEWMAST																						
PRODUCT.FS.CICSXX.MASTER	SAM (R)	28200+	C=5		C=5	C=5		80	4000	10240	20480	60	2007/08/17									
	SAM (R)	570+	C=9	C=4	C=9	C=9		4092	4092	10240	20480	60	2007/08/17									
PRODUCT.FS.PARAMETER	KSDS (R)	2351	12	2	3	3		158	21,0	4096	14436	30	2007/07/13									
	IX	5	1		1	1		1		512	IXL=2	46										
PRODUCT.FS.REPORT.TEST01																						
	SAM (R)	326+	C=9	C=6	C=9	C=9		4092	4092	10240	20480	60	2008/03/25									
PRODUCT.HIST.001.EXTRACT.CICS																						
	ESDS (R)	115	5	4	5	5		60		4096	8192	50	2008/04/16									
TEST.TEMP.HISTORY.BASE	SAM (R)	0	TEMP		9	9		250	5000	5120	10240	72	2007/10/19									
			---	---	---	---																
			453	246	454	370																
			---	---	---	---																
VOLUME	CRA	TYPE	DEV CHARS	-----	DATA	SPACE	DATA	-----	TRACKS	-----	MAXF	TIMESTMP										
			MIN-CA	MAX-CA	SETS	CLASS	SPACES	ALLOC	USED	PCNT	FREE											
CBLV10	NO	3380	32-44K	480-660K	9	0	2	13259	453	3.5	12806	12800	2007/08/10	12.12.18	(NOALLOC=10)							
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** Expiry: 2010-07-20 **																						

It is then possible to see if there is enough space left for all the files to be open at once (It is however, extremely unlikely that this would be required).

Example 3. VSAM Volume Summary

The volume summary follows the files, as shown in the previous examples. It appears on the standard Catalog report and the standard Catalog report with options, but is not user configurable. You can, however, report on volumes only , via the **SUMMARY**). parameter:

e.g.

LC DD=CBLV05 SUMMARY

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales
(0S) VM/CMS=VMNBJ 12.58 FRI 26 JUN 2009 PAGE 1

LISTVCAT DD=CBLV05 SUMMARY

USERCAT CBLV05 (3380) TYPE NRECS PCNT ALLOC TRACKS FRSP LMAX KL,RKP CISIZE BUFSP CI/CA TIMESTMP
-----
TOTAL PRIME SEC CI CA /BLK/IMB /IXL
COPY.OF.P001.UCAT KSDS 556 33.6 66 57 3*4 505 44,0 512 3072 92 2006/03/10 11.48.26
----- IX 3 2.7 3 3 3 1017 --IMB-- 1024 IXL=2 31

VOLUME CRA TYPE DEV CHARS MIN-CA MAX-CA DATA SETS SPACE CLASS DATA SPACES ALLOC USED TRACKS PCNT FREE MAXF TIMESTMP
-----
CBLV05 NO 3380 32-44K 480-660K 51 0 2 13245 4867 36.8 8378 4672 2005/08/05 14.24.19
CBLV15 NO 3380 32-44K 480-660K 150 0 1 13245 10560 79.8 2685 1232 2005/08/05 14.46.12
CBLV25 NO 3380 32-44K 480-660K 72 0 1 13259 11534 **87.0** 1725 1600 2005/08/08 09.30.44
*** WARN 012 *** DATA SPACE GETTING/IS FULL

273 4 39749 26961 67.9 12788

*** WARN 001 *** 06 = RETURN CODE FROM CBLVCAT

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** Expiry: 2010-07-20 **

```

Example: VSAM Volume Summary (CBL Ref: vmxvsum)

Notes

1. When summary is used to suppress the report detail, the self-defining Catalog entry is still reported.
2. On the above report, this self defining entry has an asterisk in the **SEC** column. This indicates that the number of secondary **extents** has reached the warning threshold value (default 1 - see CBLNAME option **CBLVCEXT**). The actual number of extents is displayed after the asterisk. If the number of secondary extents multiplied by the secondary allocation plus the prime allocation is greater than the total allocation, this indicates that the primary allocation is split over multiple extents.
3. The Catalog to which the Volume Summary applies, owns dataspace on three volumes. The percentage of space used on volume CBLV25 is flagged and a **WARN 012** message is displayed, indicating that this percentage value has exceeded the user defined warning threshold (default 85% - see CBLNAME option **CBLVCPKV**).
4. **Return code 06** indicates that a warning message was produced on this run (Additionally, every time CBLVCAT produces a return code, a **WARN 001** message is produced).

Example 4. VVDS Report

Reporting directly on the contents of a VVDS is also available (See also [Example 11](#) in the Customised report section for further use of this feature).

e.g.

LC VVDS=CBLI04

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales										(OS)	VM/CMS=VMNBJ		13.01 FRI 26 JUN 2009			PAGE	1
LISTVCAT VVDS=CBLI04																	
VVDS	CBLI04	TYPE	NRECS	PCNT	----	ALLOC	TRACKS	----	FRSP	LMAX	KL,RKP	CISIZE	BUFSP	CI/CA	TIMESTMP		
			-----	----		TOTAL	PRIME	SEC	CI CA	----	/BLK/IMB	-----	/IXL	-----	-----		
SYS1.VVDS.VCBLI04		ESDS	30+**	ALL**		3	3	2		4089		4096	0	10			
CICS161.SVSTCICS.CSD		KSDS	414	10.3		9	9	0*		200V	22,0	22528	45568	18	2007/06/12 16.10.32		
CICS161.SVSTCICS.CSD		KSDS IX	1	2.2		1	1	0*		505		512		46	** 001 CI SPLITS**		
CICS161.SVSTCICS.DFHTEMP		ESDS	300+**	ALL**		C=2	C=2	C=0*		4089		4096	8192	150	2007/08/05 17.34.00		
CICS161.SVSTCICS.FILEA		KSDS	45	8.1		1	1	0*		80	6,1	22528	45568	2	2007/08/05 17.34.00		
CICS161.SVSTCICS.FILEA		KSDS IX	1	2.2		1	1	0*		505		512		46			
CICS161.SVSTCICS.DFHINTRA		ESDS	100+**	FULL**		10	10	0*		4089		4096	8192	100	2007/08/05 17.34.00		
ICFCAT.CBLI04		KSDS IX	19+**	95.0**		1	1	1		2041	--IMB--	2048		18			
TMON.TESTTMXS.TMGTO1		KSDS	534	50.9		C=3	C=1	C=1	10*10	8185V	25,0	8192	17408	70	2007/10/31 16.04.23		
TMON.TESTTMXS.TMGTO1		KSDS IX	4	** ALL**		1	1	1		1017	IMB+REP	1024	IXL=2	31			
ICFCAT.CBLI04		KSDS	47+	50.0		14	14	7	10 10	32400V	45,9	1024	SPANNED	186	** 152 CI SPLITS**		
CICS161.SVSTCICS.TMON		RRDS (R)	150	** ALL**		C=1	C=1	C=0*		4089		4096	8192	150	2007/08/05 17.34.00		
CICS161.SVSTCICS.RSD		KSDS	27	5.4		C=1	C=1	C=1		2000V	10,0	2048	6656	252	2007/08/05 17.34.00		
CICS161.SVSTCICS.RSD		KSDS IX	1	50.0		1	1	1		2553	IMB+REP	2560		15	** 003 CI SPLITS**		
BUZZ.TESTHARN.LINEAR		LDS	281	26.8		C=7	C=7	C=7		4096		4096	8192	150			
SYS1.SVCLIB		NONVSAM	CAT=USERCAT.MVSV5R														
SYS1.SCNMLNK1		NONVSAM	CAT=USERCAT.MVSV5R														

Example: VVDS report (CBL Ref: vbvx5f8)

Notes

- IMB+REP** in the **BUFSP/IXL** column, indicates that the file was defined with the **IMBED** and **REPLICATE** attributes.
- For SMS managed volumes, **NONVSAM** data sets are reported with the limited information contained in the VVDS.
- Warning indications on this report not described in previous examples are as follows:
 - PCNT** (**FULL**)

The file space is full and no secondary allocations have been specified.
 - FRSP CI CA**

Unusable **free space** has been defined.
 - TIMESTMP** (** nnn CI SPLITS**)

The number of CI **splits** has reached the warning threshold (default 1 - see CBLNAME option **CBLVCSCI**).

Example 5. ICF Volume Summary

The VSAM concept of sub-allocated space does not exist for **MVS** ICF catalogs, therefore the volume summary for these catalogs contains fewer fields.

e.g.

LC DD=CBLI94 SUMMARY

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales										(OS)	VM/CMS=VMNBJ		13.06 FRI 26 JUN 2009		PAGE	1

LISTVCAT DD=CBLI94 SUMMARY																
ICF CAT CBLI94 (3380) TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CISIZE BUFSP CI/CA TIMESTMP																

TOTAL PRIME SEC CI CA /BLK/IMB /IXL -----																
ICFCAT.CBLI94 KSDS 47+ 50.0 14 14 7 10 10 32400V 45,9 1024 SPANNED 186 2005/09/28																
----- IX 19+**95.0** 1 1 1 2041 --IMB-- 2048 18 ** 152 CI SPLITS**																

Example: ICF Volume Summary (CBL Ref: vbvx5f8)

Notes

1. When **SUMMARY** is used to suppress the report detail, the self-defining Catalog entry is still reported (The warning indications above are described in earlier examples).

Example 6. Standard VTOC Report

A more readable replacement for **IEHLIST/ LVTOC**. The important VTOC information is contained on **only one line**. Other VTOC information is available either through **OPTIONS** to the standard report, or via the customised **REPORT** feature (see **Customised Reports**).

e.g. List the VTOC of the volume **CBLT93**

```
OPTION FREETAB      * Display freespace in a table at the end of the report.
LV  VOL=CBLT93
```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales										(OS)	VM/CMS=VMNBJ	13.35 FRI 26 JUN 2009	PAGE 1							
** VMXTFULL CTL M ***										LEVEL 001 +++ 97/06/23 16:11:51				*id *						
listvtoc vol=CBLT93 freetab																				
VTOC OF CBLT03										CISIZE	START	ALLOC	USED	TYPE	EXPIRES	BLKSIZE	LRECL	RECFM	CREATED	INFO
VTOC										557256	286	13	FBA		96	96			OWNED BY VSAM CATALOG	
TEST.SCRN.LIBRARY.4										512	155044	1244			PERMANENT			2007/03/23	NOT LAST VOL	
TEST.SOURCE.LIBRARY.4										512	156288	36000			PERMANENT			2007/03/23	NOT LAST VOL	
Z9999994.VSAMDSPC.T9A1BDD6.T8976140										512	331824	744		VSAM	PERMANENT					
Z9999992.VSAMDSPC.T9A1BDD9.T8014540										512	332568	224688		VSAM	PERMANENT					
MASTER SORT TABLE										4608	661640	160			PERMANENT			2006/11/26		
WORK MASTER										8192	661800	2304			PERMANENT			2007/01/15		
ACCOUNTS-DATA										2560	664104	4000			*EXPD*			2006/03/20	FILE SERIAL CBLT13	
V.TSTDATA										4096	669704	4672			1997/09/13			2007/03/21		
B.TSTDATA										4096	674376	5760			1997/09/13			2007/03/21		
RRR.SORTS										2560	680136	3200			PERMANENT			2007/03/04		
PRODN.HIST.FILE										10240	697128	15624			PERMANENT			2007/03/24	***INVALID EXTENT***	
FREE SPACE ON CBLT03										2	155042								OLDEST 2006/03/20	
										192288	139536								LATEST 2007/03/24	
										557542	104098								VTOC RECS LIVE.....12	
										664104	4000	EXPD							EXPD.....1	
										668104	1600								FREE....271	
										683336	13792								TOTAL....284	
TOTAL FREE BLOCKS										418068	OUT OF 712512 (41%	USED)								
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										** Expiry: 2010-07-20 **										

Example: Standard VTOC Report (CBL Ref: vmxtfull)

Notes

1. This report is for an FBA device. For a CKD device, the **CISIZE** field would be replaced by the **CYL/HD** field. The CBLVCAT messages shown in the above example are as follows:
 - ◆ **EXPIRES (*EXPD*)**
Expiry date is less than or equal to today's date (if option **EXPD** is in force).
 - ◆ **EXPIRES (PERMANENT)**
An expiry date of 1999/366 or, if defined as an absolute Julian date and not implied via a retention period in days, 1999/365 (if option **PERM** is in force).
 - ◆ **INFO (OWNED BY VSAM CATALOG)**
This volume is a prime, or candidate, volume of a VSAM catalog. It is therefore not available to other VSAM catalogs.
 - ◆ **INFO (NOT LAST VOL)**
Indicates that a sequential file has more extents on another volume, or that a file has not been closed.
 - ◆ **INFO (FILE SERIAL CBLT13)**
The file serial number is different from the disk volume serial number (Possibly caused by changing the VOLID after creation of the file).
 - ◆ **INFO (***INVALID EXTENT***)**
The extent is not totally within the extent limits in the VTOC Format 4 label.

Example 7. Standard Label Report

For VSE only, a more readable and concise replacement for the **LSERV** label information area listing .

e.g.

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales													2009/08/18 17:33	PAGE	1
-----													-----		
o LISTL ***													o		
PARTN	FNAME	STD LABEL DSN	SYSNO	VOLUME	CAT/TYP	DISP	EXPIRES	BUFNI	BUFND	START/PRECS	ALLOC/SRECS	RECSZ	INFO		
o BG(T)	CBLVSAM	CBL.VSAM.LABEL.BG	SYS001	SYSWK1	(V)	N,T,K	99			2221	3000			o	
o BG(T)	CBLTEMP	CBL.TEMP.LABEL.BG	SYS001	SYSWK1	(S)		2010/022			5510	7851			o	
o BG	CBLMULT	CBL.MULT.EXT.FILE.BG.VERY.LONG.DSN	SYS001	SYSWK1	(S)		7			32767	32767		EXT=000	o	
			SYS002	SYSWK2						32768	32768		EXT=001	o	
			SYS003	SYSWK3						65535	77566		EXT=002	o	
PARTN	FNAME	STD LABEL DSN	SYSNO	VOLUME	CAT/TYP	DISP	EXPIRES	BUFNI	BUFND	START/PRECS	ALLOC/SRECS	RECSZ	INFO		
o F2(T)	IJSYS01	%DOS.WORKFILE.SYS001.RECOVER			VSESPUC	N,K				30	50	4096		o	
o F2(T)	IJSYS02	%DOS.WORKFILE.SYS002.RECOVER			VSESPUC	N,K				30	50	4096		o	
PARTN	FNAME	STD LABEL DSN	SYSNO	VOLUME	CAT/TYP	DISP	EXPIRES	BUFNI	BUFND	START/PRECS	ALLOC/SRECS	RECSZ	INFO		
o D1(T)	LCLASSD	CBL.CLASS.D.LABEL	SYS001	SYSWK1	(S)		7							o	
PARTN	FNAME	STD LABEL DSN	SYSNO	VOLUME	CAT/TYP	DISP	EXPIRES	BUFNI	BUFND	START/PRECS	ALLOC/SRECS	RECSZ	INFO		
o S1(T)	LCLASSS	CBL.CLASS.S.LABEL	SYS001	SYSWK1	(S)		7							o	
PARTN	FNAME	STD LABEL DSN	SYSNO	VOLUME	CAT/TYP	DISP	EXPIRES	BUFNI	BUFND	START/PRECS	ALLOC/SRECS	RECSZ	INFO		
o X1(T)	LCLASSX	CBL.CLASS.X.LABEL	SYS001	SYSWK1	(S)		7							o	
PARTN	FNAME	STD LABEL DSN	SYSNO	VOLUME	CAT/TYP	DISP	EXPIRES	BUFNI	BUFND	START/PRECS	ALLOC/SRECS	RECSZ	INFO		
o STD	IJSYSRS	VSE.SYSRES.LIBRARY	SYSRES	DOSRES	(S)		99/365			2	59146			o	
o STD	IJSYSR2	VSE.SYSRES.LIBRARY	SYSCAT	DOSRES	(S)		99/365			2	59146			o	
o STD	IJSYSR1	SYS.NEW.RES		SYSWK1	(S)		99/365			2	59146			o	
o STD	IJQFILE	VSE.POWER.QUEUE.FILE	SYS001	DOSRES	(DA)		99/365			59520	372			o	
o STD	DFHJ01A	CICS.SYSTEM.LOG.A	SYS019	DOSRES	(S)					297538	3038			o	
o STD	DFHJ01B	CICS.SYSTEM.LOG.B	SYS019	DOSRES	(S)					300576	3038			o	
o STD	DFHJ02A	CICS.USER.JOURNAL.A	SYS019	DOSRES	(S)					303614	3038			o	
o STD	DFHJ02B	CICS.USER.JOURNAL.B	SYS019	DOSRES	(S)					306652	3038			o	
o STD	IJSYSHF	VSE.SYSTEM.HISTORY.FILE	SYSCAT	DOSRES	(S)		99/365			309690	5022			o	
o STD	SYSDUMP	VSE.DUMP.LIBRARY	*NO*	SYSWK1	(S)		99/365			195858	37014			o	
o STD	DTSFILE	ICCF.LIBRARY	SYS010	SYSWK1	(DA)		99/365			305970	70060			o	
o STD	IJDFILE	VSE.POWER.DATA.FILE	SYS002	SYSWK1	(DA)		99/365			392956	72044			o	
o STD	IJAFILE	VSE.POWER.ACCOUNT.FILE	SYS000	SYSWK1	(DA)		99/365			465000	2108			o	
o STD	VSEJMG	VSESP.JOB.MANAGER.FILE	SYSREC	SYSWK1	(S)		99/365			467108	186			o	
o STD	IJSYSCN	VSE.HARDCOPY.FILE	SYSREC	SYSWK1	(S)		99/365			467294	5022			o	
o STD	IJSYSRC	VSE.RECORDER.FILE	SYSREC	SYSWK1	(S)		99/365			472316	1054			o	
o STD	BLNDMF	INFO.ANALYSIS.DUMP.MGNT.FILE	SYS016	SYSWK1	(S)					478392	248			o	
o STD	BLNXTRN	INFO.ANALYSIS.EXT.RTNS.FILE	SYS017	SYSWK1	(S)		99/365			478640	124			o	
o STD	TRFILE	VTAM.TRACE.FILE	SYS001	SYSWK1	(S)		99/365			478764	496			o	
o STD	NCPLD	CU37XX.LOAD.FILE	SYS005	SYSWK1	(S)		99/365			479260	3038			o	
o STD	MSGUSR	CICS.MSGUSR	SYS018	SYSWK1	(S)					482298	434			o	
o STD	IJSYSCT	VSAM.MASTER.CATALOG		(V)			99/365							o	
o STD	IJSYSLN	%DOS.WORKFILE.SYSLNK		VSESPUC						400	600	322		o	
o STD	IESCNFL	VSE.CONTROL.FILE		VSESPUC			7							o	
o STD	IESTRFL	VSE.TEXT.REPSTORY.FILE		VSESPUC			7							o	
o STD	IESTRWF	VSE.TEXT.REPSTORY.WORKFILE		VSESPUC			7							o	
o STD	IESMSG	VSE.MESSAGES.ONLINE		VSESPUC			7							o	
o STD	IESPRB	VSE.ONLINE.PROB.DET.FILE		VSESPUC			7							o	
o STD	IESROUT	VSE.MESSAGE.ROUTING.FILE		VSESPUC			7							o	
o STD	DFHSTM	CICS.AUTO.STATS.A		VSESPUC		N,K								o	
o STD	DFHSTN	CICS.AUTO.STATS.B		VSESPUC		N,K								o	
o STD	DFHNTRA	CICS.TD.INTRA		VSESPUC										o	
o STD	DFHTEMP	DFHTEMP		VSESPUC										o	

Example: Standard Label Report (CBL Ref: vmxlabl)

Notes

- No parameters are supplied to this command, which must be complete on one logical record. The order of the report is:
 - Partition** standard labels (temporary and permanent).
 - Class** (Dynamic partition) standard labels (temporary and permanent).
 - System** standard labels.
- If any group of labels is not accessible to CBLVCAT (possibly because it is currently being updated), a message indicating the group which could not be accessed is included in the report (No warning is given if a particular group of labels is empty).

e.g.

F4 *** Inaccessible ***

3. In the **PARTN** column, a system standard label is indicated by **STD** and a permanent or dynamic partition label is indicated using the partition-id. If the partition label is temporary, **(T)** is appended to the partition-id.
4. For non-VSAM file labels that have names not beginning **IJSYS**, the warning ***NO*** is displayed in the **SYSNO** column if no logical unit exists within the label definition. Similarly ***NO*** is displayed in the **VOLUME** column of any non-VSAM label if no **EXTENT** information is defined.
5. In the **CAT/TYP** column, VSAM files will show the fname of the Catalog that owns the file if **CAT=xxxx** was specified on the **DLBL**, or **(V)** otherwise. Sequential files will show **(S)** and Direct Access files will show **(DA)**.
6. In the **DISP** (file disposition) column, the abbreviations used are **N** (NEW), **O** (OLD), **K** (KEEP), **D** (DELETE) and **T** (DATE).
7. The **START/PRECS** column contains information which varies according to file type. For sequential files, direct access files and VSAM files (or data spaces) created with the **UNIQUE** option, it contains **extent information** (if specified). This is either the sequential track number (relative to zero) where the extent is to begin (CKD), or the physical block where the extent is to begin (FBA). For SAM files which reside in a VSAM space it contains the **number of records** for the **primary** allocation (if specified).
8. The **ALLOC/SRECS** column contains information which varies according to file type. For sequential files, direct access files and VSAM files (or data spaces) created with the **UNIQUE** option, it contains the **extent allocation** (if specified) in tracks (CKD) or blocks (FBA). For SAM files which reside in a VSAM space it contains the **number of records** for the **secondary** allocation (if specified).
9. As can be seen from the above example, if a **DLBL** has been defined with more than one extent (i.e. more than one **EXTENT** card), the additional extent information is included on the following line (the unchanged **DLBL** information is not repeated). In this case the **INFO** column contains the extent sequence number in the form **EXT=nnn**.

Customised Reports

1. [Introduction](#)
2. [Example 8 - Basic Customised Report](#)
3. [Example 9 - Selective Customised Report](#)
4. [Example 10 - Advanced Customised Report](#)
5. [Example 11 - Customised VVDS Report](#)
6. [Example 12 - Combined VTOC Report](#)
7. [Example 13 - Combined Catalog Report](#)
8. [Example 14 - Combined Catalog and VTOC Report](#)
9. [Example 15 - Combined VTOC Report for all VTOCs](#)
10. [Example 16 - Combined Catalog Report for all Catalogs](#)
11. [Example 17 - Combined Report for all Catalogs & VTOCs](#)
12. [Example 18 - Free Space across all VTOCs](#)

Introduction

If the standard Catalog or VTOC report does not provide the required format or content, it is possible to produce a customised report containing the necessary information, in a format tailored to your requirements. (Customised printing for **LISTLABL** is not supported). Customisation is accomplished using one or more of the following commands/parameters, together with their associated parameters/sub-parameters.

OPTIONS

Used to control the page geometry for the report and the level of data reported for each file. It can also be used to control the fields in the standard report.

SUBSET

Allows the user to select which files should be included in the report.

REPORT

Each parameter of the **REPORT** command determines which fields will appear in a customised report and the order in which they appear (See [Summary of Syntax](#) for a complete list of REPORT parameters, their default field widths and their column format and heading).

SORT

Lines of output produced by a **REPORT** command can be sorted into ascending or descending order using the **SORT** (synonym SORTA) or **SORTD** parameters.

STOPAFT

For use with the **REPORT VCAT/VTOC SORT** parameter. It allows the user to limit the number of files to be displayed in the report. STOPAFT is ignored if not used in conjunction with **REPORT VCAT/VTOC SORT**.

MERGE

Used to combine multiple reports into a single listing.

Example 8. Basic Customised Report

REPORT can be used, in conjunction with a **LISTVCAT** / **LISTVTOC** operation, to control the fields within the report and the order in which they are displayed.

e.g.

```
REPORT VCAT DSN SORTD NRECS TYPE
LC DD=CBLI94 NOINDEX
```

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1
o -----
REPORT VCAT DSN SORTD NRECS TYPE
o LISTCAT DD=CBLI94 NOINDEX
o ICF CAT CBLI94 (3380) NRECS TYPE
o -----
o LOTS.NRECS1 62828 KSDS
o ABCD.NRECS1 61430 KSDS
o WXYZ.NRECS1 57809 KSDS
o LESS.NRECS1 57784 KSDS
o ABCD.123.LESS.NRECS 7500 RRDS
o SMALLER.NRECS.123 2250 RRDS
o LAST.SHOWN.NRECS.12 1323 KSDS
o -----
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: Basic Customised Report (CBL Ref: vmxvsimp)

Notes

- In this example the three fields of the report are:
 - Dataset name (**DSN**).
 - Number of records in the file (**NRECS**).
 - File type (**TYPE**).
- The **SORTD** parameter results in a report which is sorted, in descending order, on the fields which follow the parameter. The **NOINDEX LISTVCAT** option, causes KSDS and AIX index lines to be suppressed.

Example 9. Selective Customised Report

So far, the examples have displayed the full contents of a catalog or VTOC. Most of the time you will probably only be interested in a particular file or set of files.

e.g. Catalog report on a **SUBSET** of files.

```
REPORT VCAT DSN 30 SORTD NRECS 14
OPTIONS NOVOL NOASSOC NOINDEX
LC DD=CBLV03
SUBSET IGN=/CICS KEY=TEST NRECS=1 TYPE=EK
```

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 10:02
o -----
REPORT VCAT DSN 30 SORTD NRECS 14
o OPTIONS NOVOL NOASSOC NOINDEX * Limit the report.
o LISTVCAT DD=CBLV03
o SUBSET * Select if : (opt parameter)
o IGN=/CICS * 'CICS' not in DSN
o KEY=TEST * DSN starts 'TEST'
o NRECS=1 * File is not empty
o TYPE=EK * ESDS or KSDS
o -----
o DATASET NAME NRECS
o -----
o TEST3.TRANS.HISTORY.QUARTER 2557934
o TEST2W.WORK.HISTORY.WEEKLY 43555
o TEST2W.WORK.HISTORY.WEEKLY.SOR 30067
o TEST2.TRANS.HISTORY.WEEKLY 1
o -----
o ** ** ** CBLVCAT 2.12.156 Licensed by Compute (Bridgend) Ltd +44 (1656) 6522/
o ** Expiry: 2010-07-20 **
o -----

```

Example: Selective Customised Report (CBL Ref: vmxvsel)

Notes

1. The **REPORT** command is described in the previous example. However, any of its parameters can also be supplied with a numerical argument which overrides the implicit column width, e.g. **NRECS 14**
2. The **SUBSET** parameter is used for file selection. Only files obeying all the subsequent sub-parameters are selected. i.e. a logical **AND** (The exceptions are **KEY** and **IGN** which use a logical **OR**). The word **SUBSET** is optional as its associated sub-parameters are unique.
 - ◆ **NOVOL** suppresses Volume information.
 - ◆ **NOASSOC** suppresses file association information.
 - ◆ **NOINDEX** suppresses index lines for AIX and KSDS files.
3. The files which are included in this report must obey the following conditions:
 1. **NRECS=1**
All files with 1, or more, records i.e. all non-empty files.
 2. **TYPE=EK**
All ESDS (E) or KSDS (K) files.
 3. **KEY=TEST**
All files with a Dataset name starting with TEST.
 4. **IGN=/CICS**
Ignore all files with a name containing the string 'CICS'.
4. Remember that **NRECS** and **TYPE=xxx** will be processed as a logical **AND** (i.e. both conditions must be true). A file that satisfies this condition will then have to satisfy **IGN=/CICS OR KEY=TEST**.
5. The customised report produced will also have been sorted in descending order (**SORTD**). The sort is performed on the fields which follow **SORTD** in the parameter list (In this case the number of records - **NRECS**).

Example 10. Advanced Customised Report

A customised report can also be an invaluable tool to more experienced users, who prefer to analyse information themselves. By allowing the report to focus on particular aspects of file activity, the user can produce a clear, concise report which makes for easier analysis.

e.g. Catalog report relating to I/O performance.

```
REPORT VCAT   DSN 25  EXCPS  RECSTATS 28  IXL  CFSIZE  BUFSP 12  NSEC
LC   DD=CBLV93
      TYPE=K          * Select:  KSDS only
      KEY=A.DEMO      *         DSN's starting 'A.DEMO' only.
```

USERCAT CBLV93 (3370)	EXCPS	-- RECORD STATISTICS --				IXL	CFSIZE	BUFSP	NSEC
o -----	-----	DEL	INS	UPD	INP	---	-----	-----	----
o A.DEMO.HIGH.EXCPS.INP	17.2K 6253	1	9760		9779	3	2048 512	16000	39
o A.DEMO.ORDINARY.1	159 165	3	1	2	197K	1	1536 512	4096	
o A.DEMO.ORDINARY.2	60 46			2	39	1	1536 512	4096	
o A.DEMO.ORDINARY.3	2075 649	9	5	1424	18.7K	1	1536 512	4096	
o A.DEMO.ORDINARY.4	2674 939	1	4415		1	2	2048 512	16000	11
o A.DEMO.ORDINARY.5	1646 591	9	4	1047	8738	1	1536 512	4096	
o A.DEMO.MORE.IX.EXCPS	2475K 6830K	18	448	563K	1806K	3	3072 1536	14336	5
o A.DEMO.XYZ.1	12K 579	21	3	10.9K	67.8K	1	1536 512	4096	
o A.DEMO.XYZ.2	225 231		5	2	287	1	1536 512	4096	
o A.DEMO.XYZ.3	440 187	9	7	64	2028	1	1536 512	4096	

Example: Advanced Customised Report (CBL Ref: vmxvadv)

Notes

1. The maximum report width is 250 characters.
2. The columns with an overall heading of -- **RECORD STATISTICS** -- display a breakdown of file I/O activity. The four columns which comprise this field are:
 1. Number of deletions (DEL).
 2. Number of inserts (INS).
 3. Number of updates (UPD).
 4. Number of records read (INP).
3. Each of the above headings may be obtained individually using **RECDEL**, **RECINS**, **RECUPD** and **RECINP**.
4. The file A.DEMO.MORE.IX.EXCPS has approximately 3 times as many index EXCPS as data EXCPS. This is very detrimental to performance and should be addressed immediately. It either needs to be re-defined with a larger Bufferspace or the data and/or index **CISIZE** need changing.
5. The file A.DEMO.HIGH.EXCPS.INP has a high number of EXCPS, inserts and records read. It also has acquired 39 **secondary extents**. Running this report with the subset **SEV=3**, would have highlighted the files with performance problems as part of CBLVCAT's general monitoring procedure (including the problems mentioned above). Requesting tuning recommendations, with the **TUNE** parameter, would have recommended measures to address these problems. See **Guide to VSAM Tuning** for further information.

Example 11. Customised VVDS Report

There is not always a match between **BCS** and **VVDS** entries. This can be caused either by Catalogs being removed without the appropriate entry in the VVDS being deleted, or by a job failure. These **orphaned entries** increase system overheads and should be deleted as part of a manual housekeeping operation (Such housekeeping, of course, should be conducted by experienced personnel only).

Customised reporting on the VVDS (listing the Catalog and Component) helps the user to detect these orphaned entries (provided the removed catalogs are known). The IDCAMS command **DELETE VVR** can then be used to delete the relevant VVR (VSAM Volume Record) entries from the VVDS and the VTOC.

e.g. Customised report containing Catalog and component information only and also sorted primarily by Catalog and then by Component.

```
REPORT VCAT    SORT CATALOG 30    COMPONENT 30
LISTVCAT VVDS=CB9043
```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1	

REPORT VCAT SORT CATALOG 30 COMPONENT 30	
LISTVCAT VVDS=CB9043	
CATALOG	COMPONENT
-----	-----
	SYS1.VVDS.VCB9043
CATALOG.MASTER01	CNM.CBL1.DSIKPNL.INDEX
CATALOG.MASTER01	CNM.CBL1.DSILOGP.DATA
CATALOG.MASTER01	CNM.CBL1.DSILOGP.INDEX
CATALOG.MASTER01	CNM.CBL1.DSILOGS.DATA
CATALOG.MASTER01	CNM.CBL1.DSILOGS.INDEX
CATALOG.MASTER01	CNM.CBL1.DSISVRT.DATA
CATALOG.MASTER01	CNM.CBL1.DSISVRT.INDEX
CATALOG.MASTER01	CNM.CBL1.DSITRCP.DATA
CATALOG.MASTER01	CNM.CBL1.DSITRCP.INDEX
CATALOG.MASTER01	CNM.CBL1.DSITRCS.DATA
CATALOG.MASTER01	CNM.CBL1.DSITRCS.INDEX
SYS1.ICFCAT.OLDCAT	NOT.NEEDED01.DATA
SYS1.ICFCAT.OLDCAT	NOT.NEEDED01.INDEX
SYS1.ICFCAT.OLDCAT	NOT.NEEDED02.DATA
SYS1.ICFCAT.OLDCAT	NOT.NEEDED03.DATA
SYS1.ICFCAT.OLDCAT	NOT.NEEDED04.DATA
SYS1.ICFCAT.OLDCAT	NOT.NEEDED05.DATA
SYS1.ICFCAT.LIVECAT	CICSPV.PRISM.COPY.DFHNTA.DATA
SYS1.ICFCAT.LIVECAT	CICSPV.PRISM.COPY.DFHTEMP.DATA
SYS1.ICFCAT.LIVECAT	CICSPV.PRISM.RSD.DATA
SYS1.ICFCAT.LIVECAT	CICSPV.PRISM.RSD.INDEX
SYS1.ICFCAT.LIVECAT	CICSPV.PRISM.TMON.ALERTA.DATA
SYS1.ICFCAT.LIVECAT	CICSPV.PRISM.TMON.ALERTB.DATA

Example: Customised VVDS Report (CBL Ref: vbxx5f6)

Notes

1. As the report is sorted by Catalog, all entries relating to a non-existent Catalog will appear consecutively on the report making location easier.
2. If the Catalog SYS1.ICFCAT.OLDCAT no longer exists, the VVR records in VVDS CB9043 which reference this Catalog are therefore redundant.

Example 12. Combined VTOC Report

The **MERGE** parameter may be used on a **LISTVCAT** or **LISTVTOC** command, provided a **REPORT** statement for the appropriate operation has already been supplied. It causes the output from the current command, to be merged with the output from the command that follows. Thus, the user can merge the listings from two or more **LISTVCAT** / **LISTVTOC** commands and produce a single customised report.

e.g. Combining three VTOC Reports and sorting them in descending allocation size.

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales      94/04/19  PAGE   1
o -----
o REPORT VTOC      DSN VOLUME  SORTD ALLOC  START  * Sort descending on
o                                     * the ALLOC amount.
o LISTVTOC VOL=CBLT01 MERGE
o LISTVTOC VOL=CBLT02 MERGE
o LISTVTOC VOL=CBLT03 MERGE      * MERGE superfluous and ignored
o                                     * as no command follows.
o
o DATASET NAME                                VOLUME  ALLOC  START
o -----
o Z9999992.VSAMDSPC.T9A1BDD9.T8014540      CBLT03  224688  332568
o TEST.PAGE.ACNTS.LIBRARY.4                  CBLT01   92000   62788
o TEST.SOURCE.LIBRARY.4                      CBLT01   36000  156288
o TEST.PAGE.ACNTS.LIBRARY.5                  CBLT01   23000    2
o TEST.PAGE.ACNTS.LIBRARY.6                  CBLT01   21000  192288
o TEST.SOURCE.LIBRARY.5                      CBLT01   19006   28132
|/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: Combined VTOC Report (CBL Ref: vmxmert)

Notes

1. Using **MERGE** results in **DATASET NAME** being used as the heading for the **DSN** column.
2. If the applicable **REPORT** statement does not include a **SORT** parameter, a **default** sort (ascending) is performed using the first entry in the **REPORT** list as the primary sort field.

Example 13. Combined Catalog Report

A **MERGE** of several operations which reference the **same** catalog or VTOC, but consist of different **SUBSET** values, effectively produces a logical **OR** condition for the subsets. However, any entry which would be selected by more than one **SUBSET** value will not be reported twice.

e.g. Using **MERGE** to select files with a prescribed number of CI/CA splits **OR** secondary extents.

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 11:12 PAGE 1
o -----
o REPORT VCAT SORT DSN 30 NRECS * Sort on DSN.
o ALLOCT ALLOCS NSEC SPLITS
o LISTVCAT DD=CBLV05 MERGE
o NOASSOC NOVOL NOINDEX
o SPLIT=200 * If 200 CI splits OR 1 CA split.
o LISTVCAT DD=CBLV05 * Same catalog, see comment below.
o NOASSOC NOVOL NOINDEX
o SECALLOC=50 * If 50 secondary extents.
o * DSN selected if either subset true.
o DATASET NAME NRECS ALLOC ALLOC NSEC SPLITS
o ----- TOTAL SEC ---- CI CA
o ACCNTS.FILE 8445 50 2*** 18 116 22
o ACCNTS.TST2 2533 44 2 2 4 6
o PINDLI.DYPOR1 161173 C=20 C=2 132 8
o PUTZZT.QOS 191 60 6 57 1
o PUTZZT.QSDSF01 328 72 12 77 3
o PUTZZT.QSITS.TEMP 80524 408 6*** 51
o PUTZZT.TKTRS01 3646 42 2*** 18 302 12
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: Combined Catalog Report (CBL Ref: vmxmerv)

Notes

1. Three asterisks after the value in the **SEC** column, indicates that the number of **secondary extents** has reached the warning threshold limit (default 10 - See **CBLNAME** option **CBLVCALE**). The actual number of secondary extents is available through the **NSEC** field.

Example 14. Combined Catalog and VTOC Report

MERGE can also be used to produce a report which combines Catalog and VTOC reports. For this type of report, the headings and sort positions of the report are taken from the **REPORT** parameters applicable to the **last operation** of the merged output. This means that, when combining **LISTVCAT** and **LISTVTOC** commands, it is possible for a **LISTVCAT** heading line, to be displayed over **LISTVTOC** data and vice-versa.

e.g. Combined report in creation/defined date order (Although these fields are not identical, they both show the age of the file).

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales (O\
o -----
o REPORT VCAT 2 SORT DEFINED 15 TYPE 9 DSN * Sort on DEFINED date.
o REPORT VTOC 2 SORT CREATED 15 TYPE 9 DSN * SORT parm has no effect as
o * VCAT REPORT fields are used.
o LISTVTOC VOL=SYSWK1 MERGE
o LISTVCAT DD=VSESPUC
o NOASSOC NOVOL NOINDEX
o DEFINED TYPE DATASET NAME
o -----
o 2007/07/06 3390 VTOC
o 2007/07/06 INFO.ANALYSIS.DUMP.MGNT.FILE
o 2007/07/06 INFO.ANALYSIS.EXT.RTNS.FILE
o 2007/07/06 U VSE.DUMP.LIBRARY
o 2007/07/06 U VSE.HARDCOPY.FILE
o 2007/07/06 U VSE.RECORDER.FILE
o 2007/07/06 DA ICCF.LIBRARY
o 2007/07/06 DA VSE.POWER.ACCOUNT.FILE
o 2007/07/06 DA VSE.POWER.DATA.FILE
o 2007/07/06 VSAM Z9999992.VSAMDSPC.TC0DAA2F.TAB644C0
o 2007/07/06 VSAM Z9999992.VSAMDSPC.TC0DAA2F.TA896C2C
o 2007/07/06 VSAM Z9999992.VSAMDSPC.TC0DAA2F.T8C1C543
o 2007/07/06 VSAM Z9999992.VSAMDSPC.TC0DAA2F.T8ED5703
o 2007/07/06 VSAM Z9999992.VSAMDSPC.TC0DAA2F.T84EF892
o 2007/07/06 ESDS CICS.TD.INTRA
o 2007/07/06 ESDS DFHTEMP
o 2007/07/06 ESDS (R) CICS.DBDCICICS.DFHDMFA
o 2007/07/06 ESDS (R) CICS.DBDCICICS.DFHDMFB
o 2007/07/06 KSIDS CICS.CSD
o 2007/07/06 KSIDS CICS.RSD
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: Combined Catalog and VTOC Report (CBL Ref: vmxmervb)

Notes

1. A left margin width of 2 characters is established in both **REPORT** statements in order to indent the report column entries.
2. The **DEFINED** and **CREATED** fields have slightly different formats and widths: ccyy/mm/dd* (11 characters) and ccyy/mm/dd (10 characters) respectively. To ensure that the columns that follow line up correctly, both columns are defined with a width of 15. Note that, if a column width is specified then an intervening blank between the column data is no longer inserted automatically.
3. Similarly, the VTOC **TYPE** field and VCAT **TYPE** field have different widths (7 characters and 8 characters respectively). Therefore, to maintain alignment of the DSN columns that follow, both **TYPE** columns are defined with a width of 9.
4. In this example, the **SORT** position and headings from the **REPORT VTOC** operation are not used (they are taken from the **REPORT VCAT** as **LISTVCAT** is the last command). Although not illustrated in this example, any **REPORT** fields which do not apply to the **LISTVTOC** operation are left blank for **LISTVTOC** report lines.

Example 15. Combined VTOC Report for all VTOCs

Using **MERGE** in conjunction with **SORT** and **DEV=ALL**, creates a VTOC report over all volumes.

e.g. VTOC report over all Volumes, sorted by Blocksize and containing columns for Data Set Name, Volume Serial Number and Blocksize.

```

| CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1 |
| o ----- |
| REPORT VTOC DSN 30 VOLUME 10 SORTD BLKSIZE * Sort on blocksize. |
| o LISTVTOC DEV=ALL MERGE * All disk volumes. |
| o |
| DATASET NAME VOLUME BLKSIZE |
| ----- |
| o SASBR.RW.SASDATA CBLT06 32760 |
| TEST.BASE650.ONLINE.LOADLIB CBLT06 32760 |
| o TEST.SOS111.LINKLIB CBLT06 32760 |
| TEST.AKS110.LINKLIB CBLT06 32760 |
| TEST.SOS111.ACBLIB CBLT06 32760 |
| o SASBR.ETS.SASDATA CBLT06 32760 |
| DSN120.DSNLOAD CBLT07 23200 |
| IMS130A.RLRESLIB CBLT07 23200 |
| o IMS130A.IPO1.LINKLIB CBLT07 23200 |
| /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/ |

```

Example: Combined VTOC Report for all VTOCs (CBL Ref: vmxmermt)

Notes

1. See **DEV=ALL** for operating system conditions.

Example 16. Combined Catalog Report for all Catalogs

Using **MERGE** in conjunction with **SORT** and **REF=ALL**, creates a Catalog report over all Catalogs.

e.g. Catalog report over all Catalogs, containing Number of records, Data Set Name and Catalog Name. Index entries are suppressed (**NOINDEX**) and a sort is carried out in descending order (**SORTD**) of **NRECS**.

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales    2009/08/19    PAGE    1
o -----
REPORT VCAT  SORTD NRECS  DSN 30 CATALOG 30 * Sort on num of recs.
o
LISTVCAT REF=ALL MERGE                      * All files in one report
NOINDEX
o STOPAFT=100      * 100 files with largest number records.

o NRECS  DATASET NAME                      CATALOG
  -----
o 62828  TZN3705.CSI                      ICFCAT.CBLI04
61430  DZN3705.CSI                      ICFCAT.CBLI04
57809  TZN3725.CSI                      ICFCAT.CBLI04
o 57784  DZN3725.CSI                      ICFCAT.CBLI04
7500   CICS161.UFO261.IOXR              ICFCAT.CBLI04
5729   FB CD.CSPROD.FAVL                CATALOG.UCAT.VCBLI03
o 4647   FB CD.CSPROD.FBOF              CATALOG.UCAT.VCBLI03
4523   FB CD.CSPROD.FINV                CATALOG.UCAT.VCBLI03
4495   FB CD.CSPROD.FHST                CATALOG.UCAT.VCBLI03
o 3791   FB CD.CSPROD.FIOO              CATALOG.UCAT.VCBLI03
3218   CICK.ZEC.ABA.COA                 ICFCAT.CBLI05
3002   CICK.ZEC.DOCUMENT.TEXT.P         ICFCAT.CBLI05
o 2250   INFO.INFOV3.SDLD               ICFCAT.CBLI04
|/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: Combined Catalog Report for all Catalogs (CBL Ref: vmxmervm)

Notes

1. This example is only applicable to ICF Catalogs and requires DFP 3.1 or higher.

Example 17. Combined Report for all Catalogs and VTOCs

A combined Catalog/VTOC report over all Catalogs/Volumes can also be combined with any other report. To accomplish this a second **MERGE** parameter is needed, as the first **MERGE** is used to produce the original combined Catalog/VTOC report.

e.g. Using **MERGE** in conjunction with **REPORT**, **DEV=ALL MERGE** and **REF=ALL MERGE**, to obtain a single report over the whole of the system (VTOC output, of course, will have no Catalog name).

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales    2009/08/19 12:23    PA
o -----
REPORT VTOC      DSN 30  VOLUME 10
o
REPORT VCAT  SORT DSN 30  VOLUME 10  CATALOG * Sort by DSN.
o
LISTVTOC DEV=ALL  MERGE * 1st MERGE to combine all VTOC REPORTS.
KEY=/TEST MERGE * 2nd MERGE to combine with next command.
o
LISTVCAT REF=ALL MERGE KEY=/TEST

o DATASET NAME                      VOLUME  CATALOG
  -----
o BUZZ.TESTHARN.LINEAR              CBLI04  ICFCAT.CBLI04
GD.TEST.PRC0                        CBLI02  CAT.ICF.MASTCAT.CBLI02
GD.TEST.TBL0                        CBLI02  CAT.ICF.MASTCAT.CBLI02
o INPUT.KKK.TEST2 F5                CBLT02
MASTERFIL TEST2F5                  CBLT02
PAGE.VCBLI02.TEST01                CBLI02  CAT.ICF.MASTCAT.CBLI02
o PRODN TEST C                      CBLT01
PRODN TEST T                        CBLT01
|/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: Combined Report for all Catalogs and VTOCs (CBL Ref: vmxmervm)

Notes

1. This example is only applicable to MVS ICF Catalogs and requires DFP 3.1 or higher.
2. The **SORT** parameter in this example could have been omitted, as the default is an ascending sort using the first entry in the **REPORT** list as the primary sort field (in this case **DSN**).

Example 18. Free Space across all VTOCs

The **SORT**, feature, used in conjunction with **DEV=ALL MERGE**, **SUMMARY** and **FREETAB**, enables sorting of freespace over all volumes. It therefore allows the user to create a system **freespace** map.

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1
o -----
o REPORT VTOC VOLUME SORTD ALLOC START * Sort on ALLOC
o LISTVTOC DEV=ALL MERGE * Freespace over all volumes
o SUMMARY FREETAB
o STOPAFT 100 * 100 largest freespace areas

o VOLUME ALLOC START
o -----
o CBLT03 154786 2
o CBLT03 139536 192288
o CBLT01 118064 213760
o CBLT03 104098 557542
o CBLT01 71258 563500
o CBLT01 20544 691968
o CBLT01 15650 47138
o CBLT03 13792 683336
o CBLT01 12725 634758
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: Free Space across all VTOCs (CBL Ref: vmxtall)

Notes

1. See **DEV=ALL**, for operating system conditions.
2. The storage and run-time requirements could be considerable. Although CBLVCAT is only producing a relatively small number of print lines (governed by the free extents available and the user specified **STOPAFT**), **all files in all volumes will be processed**.

IDCAMS DEFINE and Reorganisation

1. Introduction
2. Supported File Types
3. Output File
4. Selection
5. Security Keywords
6. Warning Messages
7. IX Allocation
8. Installation Standards
9. Example 19 - DEFINE without TUNE
10. Example 20 - DEFINE with TUNE
11. Example 21 - Skeleton Reorganisation Jobstreams

Introduction

The **DEFINE** (synonym **DEF**) parameter, requests CBLVCAT to produce an additional output file of IDCAMS **DELETE/DEFINE** parameters. This enables the modelling of a file definition based on an existing file of similar characteristics. It also enables the retrieval of up to date definitions directly from the catalog, thus eliminating the possibility of re-introducing back level attributes.

The output variations available are:

1. IDCAMS **DEFINE** attributes without file tuning recommendations.
2. IDCAMS **DEFINE** attributes with file tuning recommendations.
3. Skeleton Reorganisation jobstream.

See examples **19**, **20** and **21** later in this section to illustrate these variations.

Supported File Types

ESDS, KSDS, RRDS, AIX, PATH and BLDINDEX definitions. Other types, such as SAM/ESDS, NONVSAM, USERCAT etc. are not currently supported.

Output File

- VSE** The output is to the system unit **SYSPCH**. In addition to being a real punch unit (unlikely these days), this can be maintained on the **POWER PUN** queue, or directed to a disk via the system file **IJSYSPH**. **VM/VSE** users can route the punch output to a virtual machine's reader.
- MVS** The output is to **SYSPUNCH**, with default attributes of **RECFM=FB LRECL=80 BLKSIZE=800** when assigned to disk. If **SYSPUNCH** is directed to a member of a PDS, simultaneous update is protected by means of the ENQ/DEQ facility. To ensure compatibility with the **SPF EDITOR**, the primary 8-byte name used for ENQ is '**SPFEDIT**', while the secondary name used is the Data Set Name itself.
- CMS** The output is to the virtual machine's punch. CBLVCAT will assume that **VSE** VSAM-type definitions are required. Therefore, users running against **MVS** VSAM (non-ICF) catalogs, will need to set the **CBLVCSW4** X'20' bit on, either at run-time using **OPTION**, or as a default in the **CBLNAME** module, to produce the correct output.

Selection

The standard **SUBSET** commands (e.g. **KEY=ABC**, should be used to control which datasets are required in the **DEFINE** output.

Security Keywords

PASSWORD related items, such as **ATTEMPTS**, **AUTHORISATION**, **CODE**, **CONTROLPW**, **MASTERPW**, **READPW**, etc. are ignored.

Warning Messages

When using **DEFINE** in conjunction with **TUNE** it is possible for warning messages to appear in the **DEFINE** parameters (One reason would be if CBLVCAT were recommending a large change to the defined average record length). These warnings indicate that local knowledge may be required (see [Guide to VSAM Tuning](#) for further details).

A warning message is always given when a skeleton reorganisation deck is produced as it will require user attention.

Removal of these messages, to ensure successful IDCAMS processing, is taken as acceptance of responsibility for the job by the user (See the descriptions of **WARN 014** - **WARN 019** in the Messages chapter).

IX Allocation

CBLVCAT does not produce an index allocation in the **DEFINE** parameters. Specifying only a **DATA** allocation forces IDCAMS to calculate the **INDEX** allocation. This allocation, which is in addition to the data allocation, is based upon the **control interval size**, **record size**, device type and other data set attributes. Allowing the **INDEX** allocation to default, ensures that other changes made in the **DEFINE** parameters, prior to definition, are automatically reflected in the index. This ensures that the **INDEX** allocation will **never** get 'out of step'.

Installation Standards

The production of **DELETE/DEFINE** parameters is, primarily, governed by a switch setting in **CBLNAME** (bit **CBLVCSW6** X'80').

ON	Results in option DEFINE as the default.
OFF	Results in option NODEFINE as the default.

Output from the **DEFINE** parameter is controlled by the. **CBLNAME** switches **CBLVCSW6**, **CBLVCSW7** and **CBLVCSW8** See **CBLNAME** for details on all switches). It can also be conditioned at run time, using **CBLVCSW6**, **CBLVCSW7** and **CBLVCSW8** as run time options. The switch settings which affect **DELETE/DEFINE** and reorganisation parameters are as follows:

Catalog Name

The **DEFINE** parameters can include the Catalog name statement. If excluded the define defaults to the 'Order of Catalog Selection'.

The **CBLVCSW6** X'10' bit in **CBLNAME** controls this option.

ON	Suppress Catalog name
----	-----------------------

The **DELETE** parameters should include the Catalog name for safety reasons. However it can be suppressed and, if excluded, defaults to the 'Order of Catalog Selection'. **This should be used with caution.**

The **CBLVCSW8** X'10' bit in **CBLNAME** controls this option.

ON	Suppress Catalog name
----	-----------------------

Reorganisation

The reorganisation facility produces a skeleton jobstream which **requires user attention**. A suitable warning message, **WARN 019**, is included in the jobstream before the IDCAMS **DELETE** to emphasise this point. It is assumed that the **Compute (Bridgend) Ltd** product **SELCOPY** is to be used to perform the file back up/restore operation.

The **CBLVCSW6** X'08' bit in **CBLNAME** controls this option.

ON	Create Reorganisation deck
----	----------------------------

Backup

Reorganisation defaults to tape as the backup medium.

The **CBLVCSW6** X'04' bit in **CBLNAME** controls this option.

ON	Use disk for Reorganisation work file
OFF	Use tape for Reorganisation work file

PATH

Path decks, selected by the specified **SUBSET** parameter(s), can be filtered out.

The **CBLVCSW7** X'80' bit in **CBLNAME** controls this option.

ON	PATH decks suppressed
----	-----------------------

BLDINDEX

A **BLDINDEX** deck is used to construct the data in the Alternate Index dataset. The Prime and Alternate keys from the Base Cluster are used to compose the data portion of the AIX. The **BLDINDEX** deck, if requested, follows the **DEFINE AIX** deck.

The **CBLVCSW7** X'40' bit in **CBLNAME** controls this option.

ON	BLDINDEX deck(s) suppressed
----	-----------------------------

Comments

The old define values are included in the define parameters in a 'commented out' form (/ * in positions 2 and 3). This can be suppressed.

The **CBLVCSW7** X'20' bit in **CBLNAME** controls this option.

ON	Suppress DEFINE comments
----	---------------------------------

Notes

The tuning notes available in the SYSLST/SYSLIST report can also be part of the SYSPCH/SYSPUNCH output.

The **CBLVCSW7** X'10' bit in **CBLNAME** controls this option.

ON	Include Notes
----	---------------

CLUSTER

Cluster parameters selected by the specified **SUBSET** parameter(s) can be filtered out.

The **CBLVCSW7** X'08' bit in **CBLNAME** controls this option.

ON	Cluster deck(s) suppressed
----	----------------------------

AIX

AIX parameters selected by the specified **SUBSET** parameter(s) can be filtered out.

The **CBLVCSW7** X'04' bit in **CBLNAME** controls this option.

ON	Aix deck(s) suppressed
----	------------------------

DELETE

The **DELETE** parameters preceeding the requested **DEFINE** parameters can be commented out (/ * in positions 2 and 3).

The **CBLVCSW7** X'02' bit in **CBLNAME** controls this option.

ON	DELETE deck(s) not commented out
----	---

JCL

MVS / VSE job control may be wrapped around the **DEFINE** parameters.

The **CBLVCSW7** X'01' bit in **CBLNAME** controls this option.

ON	Job control suppressed
-----------	------------------------

CMS with **MVS** output is discussed under the heading **Output File**.

Example 19. DEFINE without TUNE

It is possible to reproduce the IDCAMS **DEFINE** parameters for a file/subset of files as they are currently defined, with no tuning recommendations.

e.g.

```
LC DD=CBLV04 KEY=TSTX.ASSOC DEFINE CBLVCSW7=X'01' * Suppress JCL
```

Reproduction of the typical output to **SYSPCH/SYSPUNCH** as follows:

```
/* DEL          TSTX.ASSOC.TRANS.XREF          - */
/* CLUSTER      -                               - */
/* PURGE        -                               - */
/* CATALOG (VSAM.R1.TEST.VOL04)                - */

DEF CLUSTER (NAME (TSTX.ASSOC.TRANS.XREF)      /**/ -
INDEXED                                         /* KSDS */ -
  BUFFERSPACE ( 8704)                          -
  RECORDSIZE ( 50, 50)                         -
  SPEED                                              -
  TO ( 99366)                                    -
  NOWRITECHECK                                     -
  NONSPANNED                                       -
  FREESPACE ( 30, 10)                            -
  KEYS ( 22, 0)                                  -
  IMBED                                           -
  NOREPLICATE                                     -
  SHAREOPTIONS (2,3)                             -
  NOERASE                                         -
  UNORDERED                                       -
  NOREUSE                                         -
  USECLASS (0 P)                                 -
  SUBALLOCATION                                   -
)
DATA (NAME (TSTX.ASSOC.TRANS.XREF.DATA)        -
  VOLUMES ('CBLV04'                             -
          'CBLV32'                             -
          )                                     -
  CISZ ( 3072)                                   -
  CYLINDERS ( 120, 10)                          -
)
INDEX (NAME (TSTX.ASSOC.TRANS.XREF.INDEX)      -
  VOLUMES ('CBLV04'                             -
          'CBLV32'                             -
          )                                     -
  CISZ ( 2560)                                   -
)
CATALOG (VSAM.R1.TEST.VOL04)
```

Example: IDCAMS DEFINE without TUNE (CBL Ref: vmxvdefo)

Notes

1. In this example the three fields of the report are:
2. This example reproduces the **DELETE/DEFINE** parameters for all datasets with DSN starting with TSTX.ASSOC, from the catalog referenced by DDNAME CBLV04
3. JCL is suppressed using a run-time override option (**CBLVCSW7=X'01'**).

Example 20. DEFINE with TUNE

If the **DEFINE** and **TUNE** parameters are both specified, CBLVCAT's tuning recommendations are included in the IDCAMS **DELETE/DEFINE** parameters.

e.g.

```
LC DD=CBLI03 DEFINE TUNE KEY=/.FEMP IGN=/AIX IGN=/PATH
```

Reproduction of the typical output to **SYSPCH/SYSPUNCH** as follows:

```

//CBLDEF01 JOB
//JOB CAT DD DSN=CATALOG.UCAT.VCBLI03,DISP=SHR
//STEP2 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
    *** WARN 016 *** LARGE ALLOC CHANGE
    *** WARN 019 *** SKELETON DECK ONLY - ATTENTION REQUIRED

/* DEL          FB CD.CSPROD.FEMP          -    */
/* CLUSTER      -                          -    */
/* PURGE        -                          -    */
/* CATALOG (CATALOG.UCAT.VCBLI03)          -    */

DEF CLUSTER (NAME (FB CD.CSPROD.FEMP)
INDEXED
BUFFERSPACE ( 12288)
/* BUFFERSPACE ( 9728)
RECORDSIZE ( 400, 400)
SPEED
TO ( 99365)
STORAGECLASS (FBCDFLT )
MANAGEMENTCLASS (FBCDFLT )
NOWRITECHECK
NONSPANNED
FREESPACE ( 0, 0)
KEYS ( 4, 0)
/* NOIMBED
IMBED
REPLICATE
SHAREOPTIONS (2,3)
NOERASE
UNORDERED
NOREUSE
NODESTAGWAIT
STAGE
)
DATA (NAME (FB CD.CSPROD.FEMP.DATA)
VOLUMES ('CBLI03'
)
CISZ ( 4096)
TRACKS ( 1, 1)
/* CYLINDERS ( 1, 1)
INDEX (NAME (FB CD.CSPROD.FEMP.INDEX)
VOLUMES ('CBLI03'
)
CISZ ( 1536)
)
CATALOG (CATALOG.UCAT.VCBLI03)

```

Example: IDCAMS DEFINE with TUNE (CBL Ref: vmxdef)

Notes

1. This example will reproduce the **DELETE/DEFINE** parameters and include tuning recommendations for datasets (referenced by Catalog CBLI03) with a DSN containing the string **.FEMP**. It will also **exclude** dataset names containing the strings **AIX** or **PATH**.
2. Ignoring **AIX** and **PATH** entries can also be set as an installation default using the **CBLVCSW7 X'84'** switches, as described earlier in this section, under the heading 'Installation Standards'.
3. Commented attributes show the original being replaced. These can be suppressed with the **CBLVCSW7 X'20'** switch.
4. Comments on the DEL statement can also be suppressed with the **CBLVCSW7 X'02'** switch.

Example 21. Skeleton Reorganisation Jobstreams

The **CBLVCSW8** switch, together with the **LISTVCAT** command and **DEFINE** parameter, produces skeleton reorganisation jobstreams. The jobstreams use the **Compute (Bridgend) Ltd** product **SELCOPY** is to be used to perform the file back up/restore operation.

Suggested use

A skeleton Reorganisation jobstream would be a useful building block, to users such as Operation Support, when liaising with on-call Technical Support colleagues. It presents the user with the fundamentals of a jobstream, for discussion and subsequent modification to in-house standards.

Caution

This is not intended as a back-up facility, only as a guide to a quick reorganisation. The jobstreams are provided to assist the user, but will require attention to comply with installation standards etc. **WARN 019**, is included in the jobstreams before the IDCAMS **DELETE** to emphasise this point. Removal of this warning message, is then taken as acceptance of responsibility for the job by the user, who should ensure that adequate back-up exists for the file(s) being reorganised.

Tape/Disk

The **CBLVCSW6** x'04' switch selects the medium for the intermediate file, which is needed to perform the back-up/restore (See the description in '[Installation Standards](#)').

VSE Skeleton

A reorganisation jobstream with **tape** as the intermediate file. e.g.

```
LC DD=IJSYSUC KEY=EXR.MASTER DEFINE
CBLVCSW6 X'08' * Reorganise(X'08') Tape(X'00')
```

Reproduction of the typical output to **SYSPCH** as follows:

Example: VSE Skeleton (CBL Ref: vmxrorg1/2)

Notes

This example produces, in addition to the Catalog report, a Reorganisation Jobstream and **DEFINE** parameters for the file whose name commence with the string 'EXR.MASTER'.

See **CBLNAME** for a description of the **CBLVCSW6** switch settings.

MVS Skeleton

A reorganisation jobstream with **disk** as the intermediate file. e.g.

```
LC DD=ICFCATC KEY=CICS161 DEFINE
CBLVCSW6 X'0C' * Reorganise(X'08') Disk(X'04')
```

Reproduction of the typical output to **SYSPUNCH** as follows:

[illegible]

```

//STEP3 EXEC PGM=SELCPY
//REORGWK DD DSN=&CBLREORG,DISP=(OLD,DELETE)
//REORGDS DD DSN=CICSI61.SVSTCICS.FILEA,DISP=OLD
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
        READ REORGWK RECFM=VB
        WRITE REORGDS KSDS
/*

```

Example: MVS Skeleton (CBL Ref: vmxrorg3/4)

Notes

This example produces, in addition to the Catalog report, a Reorganisation Jobstream and **DEFINE** parameters for the file whose name commence with the string 'CICS161'.

See **CBLNAME** for a description of the **CBLVCSW6** switch settings.

Guide to VSAM Tuning

This chapter illustrates and explains the output from CBLVCAT if the **TUNE** parameter is specified. The only exception is **TUNE** when used to produce a tuned **DELETE/DEFINE** deck, which is covered in the section **IDCAMS DEFINE and Reorganisation of Guide to List Output**.

Chapter **Summary of Syntax** contains a full list of all functions and their associated parameters and sub-parameters.

Detailed descriptions of functions, parameters and sub-parameters in alphabetical order, are available in chapter **A-Z Reference**

Tuning Considerations

1. **File Selection**
2. **Environment Selection**
3. **On-line and Batch Files**
4. **Alternate Index Files**
5. **Database Files**
6. **Reusable Files**
7. **Average Record Length Estimation**
8. **Growth and Freespace**

Also see section **Tuning Principles** for CBLVCAT's approach to tuning.

The user is able to influence CBLVCAT's tuning routines using **TUNE** sub-parameters (See **Summary of Syntax** for a full list). These sub-parameters can either be used to keep the tuning recommendations within prescribed limits (e.g. restricting the **CISIZE**) or to override specific file attributes and have the tuning recommendations based on these overrides (e.g. the number of records in the file - **RECORDS**). The following include specific instances when some of these parameters would be used:

File Selection

Tuning is usually carried out on a particular file/set of files. It is possible to select the files you want to tune using the **SUBSET** parameter and its associated sub-parameters.

Environment Selection

Tuning is usually carried out on a particular file/set of files. It is possible to For optimal tuning, the operating system and the type of DASD have to be taken into account (The operating system affects the range of **physical record sizes** available to VSAM, while the disk architecture will determine which CI sizes are most efficient). The following **TUNE** sub-parameters relate to environment selection:

1. **TUNE (sys)**
TUNE specifies that tuned output is required and, optionally, that the tuning is for a particular operating system. If **TUNE** only is supplied, tuning will be based on the current operating system. However, if an argument is supplied, tuning will be based on that argument (This facility is useful when migrating to a different operating system, as the files to be transferred can be tuned prior to the migration). The arguments allowed are: **MVS** and **VSE**.
2. **DEV=nnnn**
DEV=nnn allows you to tune files for device types which differ from those currently in use (e.g. migrating from 3380 to 3390). The tuning heading will include the new device name (e.g. **CBL TUNED FOR 3390**). The device type can be any of the following DASD:
0671 3330 3340 3350 3380 3390 3310 3370 3375 9332 9335 9336 9345
3. **CYLMAX=nnn**
CYLMAX=nnn is used to limit the maximum size of an allocation. The default is the device capacity of the largest type of either the device specified or the current device.

On-line and Batch files

Tuning is usually carried out on a particular file/set of files. It is possible to On-line and batch files have specific access requirements which should be reflected in the **DEFINE** parameters.

On-line Files

These are files which are used by several applications concurrently and whose access is normally random. They should be tuned when the file is closed to the on-line environment (e.g.CICS), as Catalog statistics are not updated until file

closure. For on-line files a small **CI size** is most efficient as it keeps buffer space storage requirements to a minimum (As these files are accessed randomly, it is unlikely that 2 consecutive I/Os would involve the same CI, therefore a CI size which can contain a large number of records is unnecessary).

Batch Files

These files are normally accessed sequentially. In this case a large **CI size** is most efficient, as it keeps I/O to a minimum (The transfer of a large number of records in a single I/O is an advantage if all the records will be required).

It is possible to tune on-line and batch files within a single run. However, for greater control, they should be tuned in separate operations. The sub-parameters related to on-line and batch file tuning are described below:

1. **CBLVCONL=X'xx'**
Specifies which character strings (within the filename) activate on-line tuning for that file.

A filename is considered to be comprised of "qualifiers" separated by periods ("."). Only strings that match **complete qualifiers** within the filename will activate the on-line tuning. (If this method does not comply with your installation standards, see **KEY** and **IGN** for alternative methods of file selection).
2. **CBLVCONS=xxx**
Specifies the user defined character. string (within the filename) that sets on-line tuning (This string is used only if bit X'01' of **CBLVCONL** is set on).
3. **CBLVCONT=nnnn**
The maximum **CI size** allowed for **on-line** tuning (default 4096).
4. **CIMAX=nnnn**
Used to limit the maximum **CI size** selected (particularly useful for **on-line** files).
5. **CIMIN=nnnn**
Used to limit the maximum **CI size** selected (particularly useful for **batch** files).
6. **CISIZE=n1,n2**
This is the same as specifying both **CIMIN=n1** and **CIMAX=n2**.

Alternate Index Files

The default values (i.e. those allocated by VSAM if no values were supplied at **DEFINE** time) for average and maximum record sizes are 4086 and 32600 respectively. Unless these are truly representative, allowing CBLVCAT to use these default values will result in over allocation at tune time (A **WARN 014** message is produced for this condition). Inaccurate record sizes can be overridden using the **AVLRECL** and/or **MAXLRECL** parameters.

Database Files

The default values (i.e. those allocated by VSAM if no values were supplied at When tuning Database files, users may want to preserve the **CI size** by specifying the parameter **CISIZE=KEEP**. This is because any alteration in **CISIZE** can adversely affect LSR buffer pool definitions. See **Tuning for IMS/DL1 Databases** in section **Technical Information**.

If Catalog statistics (e.g. **Record Count**) are not maintained by VSAM, tuning could be based on inaccurate values. The CBLVCAT tuning overrides (e.g. **RECORDS**) are used to replace the innaccurate values with accurate ones.

Reusable Files

At tuning time (unless the **RECORDS** parameter is used as an override) the space allocation is based on the maximum capacity of the current total allocation, rather than on the Catalog record count (which may not contain a representative value if CBLVCAT is run at a non-peak time of the file's cycle).

Average Record Length Estimation

File fragmentation, caused by CI or CA **splits** occurring at record insertion time, may result in CBLVCAT being unable to judge the extent of **freespace** distribution. This could lead to CBLVCAT basing its tuning recommendations on an incorrect estimate of the Average Record length. A file reorganisation (**BACKUP/(DELETE/(DEFINE/(RELOAD)** will overcome this problem (See the **IDCAMS DEFINE and Reorganisation** section) Alternatively, **SELCOPY** can be used to read the whole file and calculate the precise **Average Record Length**, which can then be supplied to CBLVCAT via the **AVLRECL** parameter (contact the **SELCOPY** query desk if assistance is required for this exercise).

It should also be remembered that the average record length estimation may be affected by inaccurate Catalog statistics (possibly due to open files or previous abnormal program terminations). Running CBLVCAT when the file is not open for update by another

program (and after an IDCAMS **VERIFY** in the case of an abend) will overcome these situations.

CBLVCAT's estimated average record length has to be +/-50% of the defined value to cause a change to be recommended. However, if other file characteristics have initiated tuning recommendations, the estimated value will be reported whatever its variance from the defined value. (A **WARN 015** message is produced when the estimated value is +/-50% of the defined value).

Growth and Freespace

CBLVCAT normally recommends a primary allocation of sufficient size to hold all the existing records. This allocation usually has space for additional records, as it is rounded up to the next efficient boundary (e.g. to a full cylinder). However, for **reusable files** the capacity of the current prime allocation is used instead. The **TUNE** sub-parameters which relate to growth and freespace are as follows:

1. **GROWTH=nn**

KSDS/AIX files

The percentage of space to be reserved, at initial load, for **insertions**. The free space parameters (bytes/CI and CIs/CA) are calculated assuming that inserts occur uniformly throughout the file (Use the **RECORDS** parameter to influence the initial load size). If **GROWTH** is used, **FRSPCA** and **FRSPCI** and cannot be used.

ESDS/RRDS files

Growth increases the size of the primary allocation in order to prevent **secondary allocations** occurring when records are added. You would not normally use **GROWTH** and **RECORDS** together (e.g. specifying **RECORDS=1000** and **GROWTH=50** gives the same result as supplying **RECORDS=1500**).

2. **FRSPCA=nn** (KSDS/AIX only).

Used to specify the percentage of control intervals within a CA which are to be reserved to accommodate **CI splits**. Use of this parameter (and **FRSPCI**) results in an **absolute value** for the freespace in a CA (or CI with **FRSPCI**), rather than a more general specification based on projected file growth.

3. **FRSPCI=nn** (KSDS/AIX only)

Used to specify the percentage of **free space** within a control interval, reserved to accommodate record insertions.

4. **RECORDS=nnnn**

KSDS/AIX files

Specifies the number of records required at initial load (Use the **GROWTH** parameter to influence the space reserved for insertions).

ESDS/RRDS files

Used to change the capacity of the prime allocation. If not specified, the existing file size is used, except for **Reusable files**, where the capacity of the current prime allocation is used.

Tuning Output

1. **Introduction**
2. **SEVerity Block**
3. **TUNE Block**
4. **CAPacity Block**
5. **JCL Override Block**
6. **Example 22. Increased Initial Load**
7. **Example 23. Limiting CI Size**
8. **Example 24. Conditioning Distributed Freespace**
9. **Example 25. Conditioning Absolute Freespace**

Introduction

For each file tuned, the tuning information follows the standard report information (see **Guide to LIST Output** for non-tuned output). The tuning information is supplied via one, or more, of the four available "tuning blocks" (The number of blocks displayed depends upon installation defaults and run-time options).

See **Example 20** in **Guide to LIST Output** for information regarding the production of the tuned IDCAMS **DEFINE** parameters to SYSPCH/SYSPUNCH.

The following example shows the tuning layout (all four blocks are displayed).

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales                (OS) VM/CMS=VMNBJ      14.50 WED 19 AUG 2009    PAGE    1
o -----o
o LISTVCAT DDNAME=CBLI94 * Select catalog o
o OPTIONS PRTSEV PRTCAP PRTJCL * Default Options o
o SUBSET KEY=LAST.SHOWN.NRECS.12 * Select file o
o TUNE * Tune output required o
o
o ICF CAT CBLI94 (3380) TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CFSIZE BUFSP CI/CA TIMESTMP o
o -----o
o LAST.SHOWN.NRECS.12 KSDS 1323 15.8 C=12 C=12 C=1 5* 5 4089V 10,0 4096* 9728* 140 2008/06/25 15.33.45 o
o IX 4 30.8 1 1 1 1529 IMB+REP 1536 IXL=2 23 o
o
o *** SEV 3-03 *** ACTUAL FRSP CI = 0 PC o
o ** SEV 2-04 ** BUFSP TOO SMALL FOR EFFICIENCY o
o ** SEV 2-25 ** INEFFICIENT DATA CFSIZE o
o * SEV 1-15 * 9 CYLS CAN BE RECOVERED WHEN TUNED o
o
o *** WARN 016 *** LARGE ALLOC CHANGE o
o
o CBL TUNED o
o -----o
o DATA ( o
o CISZ (14336) - * NEW PHYREC SIZE=14336, CURRENT=4096 o
o CYLINDERS (3,1) - * OPTIMISED FOR DEVICE GEOMETRY o
o RECORDSIZE (776,4089) - * DEFINED AVLRECL=700 o
o FREESPACE (9,3) - * GIVES FREE REC=2/18, FREE CI=2/42 (IMBED) o
o BUFFERSPACE (34816) ) * 34K MINIMUM FOR DIRECT PROCESSING o
o
o * USING AVLRECL=776 --- FILE CAPACITIES (NRECS) --- o
o * ----- TUNED ----- --- ORIG (ESTD) --- o
o * PCNT PRIME SEC PCNT PRIME SEC o
o * -----o
o * INIT LOAD 74 1920 640 76 7980 665 o
o * FREE 13 348 116 4 420 35 o
o * -----o
o * (IMBED) 87 2268 756 (IMBED) 80 8400 700 o
o * -----o
o
o OPTIONAL JCL OVERRIDE FOR SEQ I/O o
o -----o
o BUFND=5 * (70K) FAST o
o BUFND=8 * (112K) URGENT o
o BUFND=25 * (350K) **TURBO** (BUT WILL IMPACT OTHER WORK) o
o
o *** WARN 001 *** 12 = RETURN CODE FROM CBLVCAT o
o
o ** * ** * ** * CBLVCAT 2.12.156 Licensed by Compute (Bridgend) Ltd +44 (1656) 652222 ** * ** * ** * ** * o
o ** Expiry: 2010-07-20 ** o

```

Example: LISTVCAT Tuning Output (CBL Ref: vmxtuno)

Each block's format and content is discussed in detail in the four sections which follow:

SEVerity Block

This is the first tuning block and contains the file Severity Messages. (See [SEV Messages](#) for a detailed description of all SEVerity messages). It may be suppressed with the **NOPSEV** option and may also be printed for a non-tuning run using the **PRTSEV** option.

The severity messages are CBLVCAT's method of indicating problem files. The level (1-3) of the message indicates how severe CBLVCAT thinks the file problems are.

SEV 3-nn	Files should be tuned and redefined immediately
SEV 2-nn	Files should be changed when next loaded
SEV 1-nn	Files have characteristics which require investigation

The SEV messages from the above tuning output example are as follow:

```

*** SEV 3-03 *** ACTUAL FRSP CI = 0 PC
** SEV 2-04 ** BUFSP TOO SMALL FOR EFFICIENCY
** SEV 2-25 ** INEFFICIENT DATA CFSIZE
* SEV 1-15 * 9 CYLS CAN BE RECOVERED WHEN TUNED

```

There will always be at least one **SEV 2-nn** and/or **SEV 3-nn** message for each file in need of tuning, otherwise, by definition, the file is already in tune. If tuning has been influenced by sub-parameters, additional appropriate **SEV 2-nn** messages are displayed, showing why the file has been tuned. A warning message can also follow this severity message block which relates either to the tuning recommendations (e.g. A change to the allocation of +/-50% or more - **WARN 016** as in the example), or to the tuning request (e.g. **WARN 011 NO FILES TUNED**).

TUNE Block

This is the first tuning block and contains the file Severity Messages. This is the second tuning block and contains the recommended tuned **IDCAMS DEFINE** parameters. It cannot be suppressed for a tuning run, however, if CBLVCAT considers the file to be in tune (i.e. No SEV 2-nn or SEV 3-nn messages), the detail will be suppressed and the message "**== FILE ALREADY IN TUNE ==**" will be displayed (If all files in the tuning run were considered to be in tune a **WARN 011** message would also be included after the SEV block). There may be SEV 1-nn messages but these would not be reflected in the **DEFINE** parameters, which will be unchanged from the current definition.

If a file is selected for tuning (i.e. SEV 2-nn or SEV 3-nn messages exist) all SEV message recommendations (including SEV 1-nn) will be incorporated into the tuned **DEFINE** parameters.

If tuning overrides have been supplied this automatically invokes a SEV 2-nn message causing the **DEFINE** parameters to incorporate all SEV changes, even if the file would otherwise have been considered in tune (i.e. if the only other messages were SEV 1-nn these would be incorporated into the revised **DEFINE** parameters).

The tuning block has two possible headings:

1. CBL TUNED

If the **DEV** parameter was omitted from the tuning run (i.e. tuning was for the current device).

2. CBL TUNED FOR DEV=nnnn

If **DEV=nnnn** was specified (Indicating that the tuning output is based on the device specified as the argument).

Because of the inherent danger of defining parameters at the **CLUSTER** level (e.g. a single CI size applying to both data and index components would almost certainly overallocate the index), CBLVCAT's tuning output is divided into two sections with headings as follows:

1. DATA (

Subsequent tuning recommendations apply **only** to the **data** component of the cluster (The final recommended change will be followed by a closing bracket ')', indicating the end of data component recommendations).

2. INDEX (

Subsequent tuning recommendations will apply **only** to the **index** component of the cluster (The final recommended change will be followed by a closing bracket ')', indicating the end of index component recommendations). Most **INDEX** values should be left for VSAM to select default values.

Tuning recommendations from the above tuning output example are as follow:

```

CBL TUNED
-----
DATA (
  CISZ          (14336)          - * NEW PHYREC SIZE=14336, CURRENT=4096
  CYLINDERS     (3,1)           - * OPTIMISED FOR DEVICE GEOMETRY
  RECORDSIZE    (776,4089)      - * DEFINED AVLRECL=700
  FREESPACE     (9,3)           - * GIVES FREE REC=2/18, FREE CI=2/42 (IMBED)
  BUFFERSPACE   (34816)        ) * 34K MINIMUM FOR DIRECT PROCESSING

```

All possible recommendations which apply to the **DATA component** follow:

CISZ(nnnnn)

Can be included for both the **INDEX** and **DATA** components (**INDEX** recommendations are discussed below).

Its presence indicates that a change to the data component CI size (control interval size) value is being recommended (See **CI size** in **Additional VSAM Information**). The value is subject to any restrictions made via the **CIMIN/ CIMAX/ CISIZE** or the **CBLVCONL/ CBLVCONS/ CBLVCONT** (on-line selection) tuning sub-parameters. It is displayed in one of the following formats:

1. CISZ(nnnnn)

Recommends the CI size which will best utilise the average record length and device characteristics

2. CISZ(nnnnn) - * ONLINE VALUE

The file is an on-line file, selected in accordance with the **CBLVCONL** and **CBLVCONS** options (or by the appropriate **CBLNAME** values). The maximum CI size available is defined in the **CBLVCONT** option (or **CBLNAME** value) and defaults to 4096. (See description in **On-line and Batch files** earlier in this section).

3. CISZ(nnnnn) - * NEW PHYREC SIZE=nnnn, CURRENT=nnnn

For CKD devices, this indicates that the recommended CI size will result in a change to the physical record size used by VSAM. It normally occurs when tuning for a different operating system (**TUNE sys**), but can occur for files that were defined by previous versions of VSAM (FBA devices always have 512 byte physical records).

4. CISZ(nnnnn) - * NEW PHYREC SIZE=nnnn, CURRENT=nnnn (DEV CHANGE)

This advises that the CI size change may be caused by the device change (The current CI size may be correct for the current device).

BLOCKS (nnnnn nnnn) or CYLINDERS (nn n) or TRACKS (nnn nn)

Specifies the disk space to be allocated to the file. For FBA devices the values will be displayed in blocks, whereas for CKD devices the values will be displayed in cylinders (except for very small files which will be displayed in tracks).

The first value displayed refers to the size of the **Primary Allocation** which is space reserved at load time.

The second value refers to the size of the **Secondary Allocation**. Space for a Secondary Allocation is not reserved at load time but is acquired each time the current allocation is full and a further record addition takes place. (Of course, if the file is defined with an insufficient amount of primary allocation, secondary allocation could be acquired at load time).

A **WARN 016** message is produced for allocation recommendations of +/-50% of the current value.

A **WARN 017** message is produced when the estimated number of records (e.g. for a reusable file), is +/-50% of the current number of records. This also affects the primary and secondary allocations.

The allocation recommendation may be accompanied by one of the following comments:

1. *** OPTIMISED FOR DEVICE GEOMETRY**
The recommended allocation has been increased because of the minimum CA/maximum CA (track/cylinder) relationship of the device. This is because processing is most efficient if allocations are either in full cylinders, or a factor of a cylinder.
e.g. If the allocation is currently 4 tracks, a change to 5 will be recommended for a device with 15 tracks/cylinder (CBLVCAT always 'rounds upwards').
2. *** LIMITED BY CYLMAX PARM**
The **CYLMAX=nnn** parameter has been supplied as a tuning override and the file is slightly too big to load into this restricted primary allocation. The complete file will load with one secondary allocation.
3. *** LIMITED BY CYLMAX PARM (n PRIMARY VOLS REQD)**
The **CYLMAX=nnn** parameter has been supplied as a tuning override and loading the file would require more than one secondary allocation. The file therefore needs multiple primary allocations, which requires a **VOL** entry to be included in the **DEFINE** parameters (A **WARN 018** message is also produced for this condition).
4. *** LIMITED BY DEVICE CAPACITY**
The primary allocation is limited by the device size and the file is slightly too big to load into this restricted primary allocation. The complete file will load with one secondary allocation.
5. *** LIMITED BY DEVICE CAPACITY (n PRIMARY VOLS REQD)**
The primary allocation is limited by the device size and loading the file would require more than one secondary allocation. The file therefore needs multiple primary allocations, which requires a **VOL** entry to be included in the **DEFINE** parameters.

Note

VSAM also allows Allocation to be specified in **RECORDS**. This is not recommended as different devices require different CA size calculations.

RECORDSIZE(nnn nnn)

Indicates the revised **Average** and **Maximum** record lengths. The first value displayed will relate to the average record length. If the **AVLRECL** parameter has been supplied, this will be shown as the recommended change. Otherwise, the value indicates that CBLVCAT's estimated average record length differs from that defined (For KSDS files, with distributed free space, this calculation can only be approximate - See the **Average Record Length Estimation in Tuning Considerations**).

A change of +/- 50% will activate tuning recommendations, however, if other characteristics have already initiated tuning output, the tuned value will be reported whatever the percentage change. (A **WARN 015** message is also produced for average record length recommendations of +/-50% of the current value).

The second value displayed will relate to the maximum record length. If the **MAXLRECL** parameter has been supplied, this will be shown. Otherwise, the current maximum record length will be shown. In either case, it will have been increased to the new average record length, if it would otherwise have had a lower value.

The **RECORDSIZE** recommendation will always have the following comment:

1. *** DEFINED AVLRECL=nnn**
The defined average record length is displayed in order to show the size of the recommended change.

Note

The display of record lengths in the standard report is governed by the **AVRL / LMAX** option, which defaults to **LMAX**. (If set to **LMAX** there is no other indication on the report of the defined average record length value).

FREESPACE(nn nn) (KSDS and AIX files only)

Indicates the recommended amount of **free space** to be reserved for future record insertions. The recommendation will occur in one of the following forms (Note - when the **IMBED** literal is shown, the CA capacity has been reduced by one minimum CA to reflect this attribute):

1. **FREESPACE(n n) - * GIVES FREE REC=n/n, FREE CI=n/n (IMBED)**
The two numeric values (separated by a blank), indicate the recommended percentage of freespace within Control Intervals and Control Areas respectively.
· **FREE REC=n/n**
Indicates the number of record slots left free in a CI, compared with its total capacity (The number of records per CI during initial load may be calculated by subtracting these two values).

· **FREE CI=n/n**

Indicates the number of CIs left free in a CA, compared with its total capacity (The number of CIs used per CA during initial load may be calculated by subtracting the two values).

The CA capacity (during file loading) can be calculated by multiplying used records by used CIs (Other file capacity information is shown in the **File Capacity block** described later).
e.g. Using the figures from the previous example.

* GIVES FREE REC=2/18 FREE CI=2/42 (IMBED)

Represents $(18 - 2) * (42 - 2) = 640$ records per CA.

2. **FREESPACE(0 n) - * GIVES FREE REC=0/n, FREE CI=n/n (IMBED)**

Always occurs when **FRSPCI=0** has been specified. If it has not been specified, it shows that your chosen **CISZ** and **FREESPACE** values have combined to produce an 'effective' **FREESPACE** of zero, i.e. The actual amount of space reserved may not be large enough to accommodate a single insertion. It is therefore more efficient to reserve no freespace, rather than unusable freespace. If this is unacceptable your **CISIZE** override (or **FRSPCI=nn**) should be reconsidered (GIVES FREE is described above).

3. **FREESPACE(n 0) - * GIVES FREE REC=n/n, FREE CI=0/n (IMBED)**

Always occurs when **FRSPCA=0** has been specified.

In the case of small files it can also have another meaning. It shows that CBLVCAT is recommending no freespace for files of 2 CIs or less or that the percentage of freespace/CA that has been specified has resulted in a freespace of less than 1 CI, therefore CBLVCAT is recommending no freespace is reserved (GIVES FREE is described above).

4. **FREESPACE(0 0) - * GIVES FREE REC=0/n, FREE CI=0/n (IMBED)**

Occurs if free space exists and the **GROWTH=0** parameter (or **FRSPCI=0** and **FRSPCA=0**) has been supplied.

Note

Removing free space for a KSDS should not be an automatic change. Confirmation should first be obtained that the file will not have subsequent insertions, as they would then cause immediate CI and CA splits.

BUFFERSPACE(nnnnn)

Indicates the **minimum** efficient **Bufferspace** value for random processing

Storage allocation for Bufferspace, as well as being defined in the catalog, may be **increased** (but not decreased) for the duration of a job, or jobstep, using a **JCL override** (see **JCL Overrides Block**). As the value may not be decreased at run time, it is important that the defined value is the **minimum** required for efficient processing.

The **BUFFERSPACE** recommendation will always have the following comment:

1. *** nnK MINIMUM FOR DIRECT PROCESSING**

The value is rounded up to a 2K boundary (where K=1024).

The comment is a reminder that the value relates to random processing (sequential access generally requires a larger value - see **On-line and Batch Files** earlier in this section)

NONSPANNED

The file has been defined with an unnecessary **SPANNED** attribute. A small increase in CI size has been sufficient to allow all records to fit within single control intervals.

Spanned records are inefficient as they must start at the beginning of a CI, and the CI containing the last segment cannot hold other records. CBLVCAT recommends un-spanning a file if its maximum LRECL+7 does not exceed the lower of **CIMAX** and 5 times CI size.

The **NONSPANNED** recommendation will always have the following comment:

1. *** OR REMOVE SPANNED**

This indicates that **NONSPANNED** is the **DEFINE** default and removing the existing **SPANNED** parameter is sufficient.

Note

The **CISIZE=KEEP** parameter can be used as an override to stop CBLVCAT recommending the removal of the **SPANNED** attribute.

NOWRITECHECK

Defining a file with **WRITECHECK** adds an additional **read I/O** operation after each **write**. With the reliability of modern disk technology it is no longer necessary, therefore it is recommended that **WRITECHECK** is not specified.

The **NOWRITECHECK** recommendation will always have the following comment:

1. *** OR REMOVE WCHK**

This indicates that **NOWRITECHECK** is the **DEFINE** default and removing the existing **WCHK** parameter is sufficient.

SPEED

Shows that the file was defined with, or allowed to default to, the **DEFINE** attribute **RECOVERY** (This is a costly option as it can increase the time taken to load a file by up to 40% and is **only useful** if you have a **load re-start procedure**).

RECOVERY causes VSAM to preformat each Control Area before it loads records into it. Therefore, if the load fails, the last record written is automatically followed by an end-of-file record. The time increase that this preformatting causes for **each** load, far outweighs the time saving in the unlikely event of a load failing.

The **SPEED** recommendation will always have the following comment:

1. * **DON'T ALLOW DEFAULT**

This indicates that the **SPEED** attribute must be specifically coded in the IDCAMS **DEFINE**, as **RECOVERY** is the default.

All possible recommendations which apply to the **INDEX** component follow:

CISZ(nnnnn)

This recommendation can be included for both the **INDEX** and **DATA** components (**DATA** recommendations are discussed above).

When included for the index component, it indicates the minimum value required assuming normal key compression. However, if your file has large keys and the front and backs of keys tend to change very frequently, the keys will not compress well. In this case you should increase the recommended index **CISZ** value by up to 2048 bytes. (See **key compression** in section **Additional VSAM Information**).

The following comment may be displayed:

1. * **VALUE IS NOW CORRECT WITH THE NEW DATA CISIZE**

This indicates that the current **index CISIZ** is correct if the recommended change to the data **CISIZ** is made.

NOIMBED

This change is recommended to the index component of small files.

When a KSDS file is defined with the **IMBED** option, the index sequence set is moved to the first track of each CA and repeated as many times as it will fit on the track. For large heavily used files (especially those used on-line) **IMBED** can help in two ways. It can reduce the amount of index I/O activity and it can reduce disk rotational delay which results in faster transfer of the required CI. It is of little or no value to small files.

The **NOIMBED** recommendation will always have the following comment:

1. * **OR REMOVE IMBED**

This indicates that **NOIMBED** is the **DEFINE** default and removing the existing **IMBED** parameter is sufficient.

CAPacity Block

This is the third tuning block and shows capacities (in records) of the primary and secondary allocations for the tuned and current values (A **WARN 017** message is produced when the estimated number of records is +/-50% of the current **NRECS** value). It can be suppressed using the **NOPCAP** option.

The original file capacities can have 2 different headings, these are:

1. --- ORIG (ESTD) ---

This is the heading if the file has fixed length records and CBLVCAT knows the exact length.

2. ---- CURRENT ----

This is the heading if CBLVCAT is using its estimate of the average record length.

The block format depends upon whether the files are KSDS/AIX or ESDS/RRDS.

KSDS files

* USING AVLRECL=150			--- FILE CAPACITIES (NRECS)					
			TUNED		CURRENT			
PCNT			PRIME	SEC	PCNT	PRIME	SEC	
* INIT	LOAD	79	504K	63.2K	68	180K	180K	
* FREE		21	134K	16.8K	24	63K	63K	
* 100			639K	80K	91	243K	243K	
* ---			---	---	---	---	---	

The percentages illustrate the number of **prime** records achieved out of the maximum possible primary allocation (Assuming the optimum CI size for the device). This example is based on a 3390 and so uses a data CI size of 18K (for a 3380 use 22K). The allocation capacities are calculated by dividing the track capacity by the average record length.

It is important to realise that the actual number of records in the original and tuned sections **cannot be compared directly**. This is because CBLVCAT may have also recommended changes to the allocation size, which would result in a

comparison between values based on different allocation sizes. The important figures for comparison are the percentages, which show the relative success in utilisation of the primary disk allocation. In the above example:

- ◇ 639K records represent 100% of the total primary allocation capacity.
- ◇ 504K records represent 79% of the total primary allocation capacity.
- ◇ 134K records represent 21% of the total primary allocation capacity.

IMBED uses one track (or minimum CA) per data CA for index, which reduces the percentages accordingly.

ESDS/RRDS files

```

== FILE ALREADY IN TUNE ==

* USING AVLRECL=100      --- FILE CAPACITIES (NRECS) ---
*          ----- TUNED -----          --- ORIG (ESTD) ---
*          PCNT   PRIME   SEC          PCNT   PRIME   SEC
*          -----          -----          -----
*          84     4680   360          == SAME ==

```

ESDS and **RRDS** files do not have free space reserved during initial load.

The information displayed in the block has the same meaning as for **KSDS** files except that the concept of free space does not exist. Therefore, there is only one line displayed for the initial load.

The example above shows the block when a file is already in tune (The "FILE ALREADY IN TUNE" message can be shown even when there is a new estimated average record length which is not +/- 50% of the defined value).

JCL Override Block

This is the fourth and last tuning block and contains the suggested JCL overrides for enhanced **sequential** processing. It can be suppressed using the **NOPJCL** option.

BUFND values are supplied for **MVS** systems, and **VSE/SP** systems from 1.4.1, **BUFSP** for **VSE** systems prior to 1.4.1. (**BUFSP** is rounded to the next highest 2K boundary).

Examples of both types follow:

```

OPTIONAL JCL OVERRIDE FOR SEQ I/O
-----
BUFND=5      * (70K)  FAST
BUFND=8      * (112K) URGENT
BUFND=25     * (350K) **TURBO** (BUT WILL IMPACT OTHER WORK)

```

Example: Tune JCL - BUFND (CBL Ref: vmxjclo)

```

OPTIONAL JCL OVERRIDE FOR SEQ I/O
-----
BUFSP=73728  * (72K)  FAST
BUFSP=116736 * (114K) URGENT
BUFSP=360448 * (352K) **TURBO** (BUT WILL IMPACT OTHER WORK)

```

Example: Tune JCL - BUFSP (CBL Ref: vmxjclj)

The 3 recommended JCL overrides are described as follows:

1. **FAST**
The value required for normal fast sequential processing (The additional buffers will not normally impact other users).
2. **URGENT**
Use this value for high priority jobs (The additional buffers will have some effect on other users). If all users submit **URGENT** jobs, the advantage over **FAST** is lost and additional memory has been paged in for no effect.
3. ****TURBO****
To be used in exceptional cases only, particularly if the **(BUT WILL IMPACT OTHER WORK)** comment is displayed (The additional buffers will have a large effect on other users, but will let your top-priority job finish extremely quickly).

It is also possible (for small files) for additional information to be printed alongside the above messages. These are warning indications about the bufferspace implications relating to small file sizes. The possible messages are:

1. **(THIS IS ALREADY THE DEFAULT)**
The **defined BUFSP** (for random processing) is already sufficient for this level of sequential processing. This will occur for files with a small maximum record length and data CI size, and so require a relatively large index CI size.
2. **** DO NOT USE ** (FILE TOO SMALL)**
The number of control intervals actually containing data is lower than the number of buffers that would be allocated for this level of processing. Storage would therefore be allocated, but never used.

3. **N/A * FAST (PRIME ALLOCATION TOO SMALL)**
N/A * URGENT (PRIME ALLOCATION TOO SMALL)
N/A *TURBO** (PRIME ALLOCATION TOO SMALL)**

This message completely replaces the particular bufferspace recommendation to which it applies and means that the primary allocation can be read, in full, into a smaller buffer area. Application of this particular recommendation would have resulted in over-allocation i.e. unusable storage would have been reserved.

Example 22. Increased Initial Load

This example illustrates tuning with an increased. initial load capacity requested by the **RECORDS** sub-parameter.

e.g.

```
LC DD=CB9009    KEY=/SUMM
   TUNE    RECORDS=500000
   NOASSOC NOPJCL NOVOL      * OPTION parameters
```

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales
(0S) VM/CMS=VMNBJ 14.59 WED 19 AUG 2009 PAGE 1

-----
LISTVCAT DDNAME=CB9009 * Select catalog
SUBSET KEY=/SUMM
TUNE RECORDS=500000 * Tune output required
NOASSOC NOPJCL NOVOL

ICF CAT CB9009 (3390) TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CISIZE BUFSP CI/CA TIMESTMP
-----
CDBPV.AP.INV.SUMM.FILE KSDS(R) 327644 67.5 C=100 C=50 C=50 25 0 150 60,4 4096 12288* 180 2006/09/04 18.39.57
IX 101 84.2 10 5 5 4089 4096 IXL=2 12

** SEV 2-04 ** BUFSP TOO SMALL FOR EFFICIENCY
** SEV 2-25 ** INEFFICIENT DATA CISIZE
** SEV 2-27 ** TUNING FOR RECORDS/AVLRECL CHANGE REQUEST
* SEV 1-18 * SEC EXTENTS EXIST

*** WARN 017 *** LARGE NRECS CHANGE

CBL TUNED
-----
DATA (
CISZ (18432) - * NEW PHYREC SIZE=18432, CURRENT=4096
CYLINDERS (120,15) - * OPTIMISED FOR DEVICE GEOMETRY
FREESPACE (18,6) - * GIVES FREE REC=22/122, FREE CI=3/45
BUFFERSPACE (43008) ) * 42K MINIMUM FOR DIRECT PROCESSING
INDEX (
CISZ (1536) ) *

* USING AVLRECL=150 --- FILE CAPACITIES (NRECS) ---
* TUNED CURRENT
* PCNT PRIME SEC PCNT PRIME SEC
* INIT LOAD 79 504K 63.2K 68 180K 180K
* FREE 21 134K 16.8K 24 63K 63K
* 100 639K 80K 91 243K 243K
*

*** WARN 001 *** 10 = RETURN CODE FROM CBLVCAT

** ** ** ** ** ** CBLVCAT 2.12.156 Licensed by Compute (Bridgend) Ltd +44 (1656) 652222 ** ** ** ** **
** Expiry: 2010-07-20 **

```

10. See the earlier **SEVerity block** description for an explanation of the SEVerity and **WARN 017** messages.

Example 23. Limiting CI Size

This example illustrates the effect of supplying a **CIMAX** parameter, typically to limit CI size for on-line use.

e.g.

```
LC DD=CBL111      KEY=CBL.PROD.INVOICE.LINE
      TUNE        CIMAX=4096
      NOVOL NOASSOC                      * OPTION parameters
```

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales
(0S) VM/CMS=VMNBJ 15.23 WED 19 AUG 2009 PAGE 1
-----
LISTVCAT DDNAME=CBL111 * Select catalog
SUBSET KEY=CBL.PROD.INVOICE.LINE * Select file
TUNE CIMAX=4096 * Tune output required
NOVOL NOASSOC * Limit Output
-----
USERCAT CBL111 (3380) TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CFSIZE BUFSP CI/CA TIMESTMP
-----
TOTAL PRIME SEC CI CA ---- /BLK/IMB ----- /IXL -----
CBL.PROD.INVOICE.LINE
KSDS 136741 80.1 C=80 C=60 C=10 18 6 300 26,0 18432 40960 35 2006/06/09 21.44.36
** 079 CI SPLITS**
** 021 CA SPLITS**
IX 75 80.7 3 3 1 1017 1024 IXL=3 31
*** SEV 3-12 *** INDEX EXCPS DWARF DATA
** SEV 2-05 ** CA SPLITS EXIST
** SEV 2-08 ** CI SPLITS TOO HIGH (1 PC OF INSERTS)
** SEV 2-30 ** TUNING FOR CFSIZE CHANGE REQUEST
* SEV 1-18 * SEC EXTENTS EXIST
CBL TUNED
-----
DATA (
CISZ (4096) - * NEW PHYREC SIZE=4096, CURRENT=6144
CYLINDERS (89,12) - * OPTIMISED FOR DEVICE GEOMETRY
FREESPACE (19,6) - * GIVES FREE REC=2/13, FREE CI=9/150
BUFFERSPACE (16384) ) * 16K MINIMUM FOR DIRECT PROCESSING
INDEX (
CISZ (2048) ) *
* USING AVLRECL=300 --- FILE CAPACITIES (NRECS) ---
*
* PCNT TUNED PRIME SEC PCNT CURRENT PRIME SEC
*
* INIT LOAD 69 138K 18.6K 71 96K 16K
* FREE 18 35.5K 4788 24 32.1K 5350
*
* 87 174K 23.4K 95 128K 21.4K
*
OPTIONAL JCL OVERRIDE FOR SEQ I/O
-----
BUFND=5 * (20K) FAST
BUFND=8 * (32K) URGENT
BUFND=32 * (128K) **TURBO** (BUT WILL IMPACT OTHER WORK)

```

Example: Limiting CI Size (CBL Ref: vmxtex3)

Notes

1. The file selected for tuning has a Data Set Name commencing with the string 'CBL.PROD.INVOICE.LINE' from a Catalog referenced by CBL111.
2. Volume information has has been suppressed using option **NOVOL**.
3. Association information has been suppressed using option **NOASSOC**.
4. A CI size upper limit of **4096** is imposed via the **CIMAX** parameter, as the file is used predominately in an online environment.
5. The Allocation is optimised for the device geometry of a 3380.
6. The Index CI size is increased from **1024** to a more efficient **2048**.
7. Bufferspace is reduced in line with the changes in Data and Index CI size.
8. See the earlier **SEVerity block** description for an explanation of the SEVerity messages.

e.g.

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales
(OS) VM/CMS=VMNBJ 15.44 WED 19 AUG 2009 PAGE 1

LISTIVCAT DDNAME=CBLV05 * Select catalog.
SUBSET KEY=ACCNTS.TEST.SORTED TYPE=K
TUNE * Tune output required.
GROWTH=20 RECORDS=9999 * Increase free space and primary allocation.

USERCAT CBLV05 (3380) TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CISIZE BUFSP CI/CA TIMESTMP
-----
TOTAL PRIME SEC CI CA ---- /BLK/IMB ---- /IXL ----

ACCNTS.TEST.SORTED KSDS 7400 **88.1** 64 40 8 266 10,0 4096 9216* 70 2007/03/31 10.49.12
IX 9 23.1 1 1 1 1017 --IMB-- 1024 IXL=2 31
VOL1=CBLV25

** SEV 2-04 ** BUFSP TOO SMALL FOR EFFICIENCY
** SEV 2-10 ** IMBED COSTS 13 PC OF DATA SPACE
** SEV 2-25 ** INEFFICIENT DATA CISIZE
** SEV 2-27 ** TUNING FOR RECORDS/AVLRECL CHANGE REQUEST
** SEV 2-29 ** TUNING FOR GROWTH REQUEST
* SEV 1-09 * FILE GETTING/IS FULL
* SEV 1-14 * KSDS/AIX HAS NO IMBEDDED FREE SPACE
* SEV 1-18 * SEC EXTENTS EXIST
* SEV 1-22 * SPEED NOT DEFINED - RECOVERY IS DEFAULT

*** WARN 016 *** LARGE ALLOC CHANGE

CBL TUNED
-----
DATA (
CISZ (6144) - * NEW PHYREC SIZE=6144, CURRENT=4096
CYLINDERS (6,1) - * OPTIMISED FOR DEVICE GEOMETRY
FREESPACE (15,5) - * GIVES FREE REC=4/23, FREE CI=5/98 (IMBED)
BUFFERSPACE (18432) - * 18K MINIMUM FOR DIRECT PROCESSING
SPEED ) * DON'T ALLOW DEFAULT
INDEX (
CISZ (1536) ) *

* USING AVLRECL=266 --- FILE CAPACITIES (NRECS) ---
* TUNED CURRENT
* PCNT PRIME SEC PCNT PRIME SEC
* INIT LOAD 70 10.6K 1767 77 5250 1050
* FREE 19 2922 487 0 0 0
* (IMBED) 89 13.5K 2254 (IMBED) 77 5250 1050
*

OPTIONAL JCL OVERRIDE FOR SEQ I/O
-----
BUFND=5 * (30K) FAST
BUFND=8 * (48K) URGENT
BUFND=30 * (180K) **TURBO** (BUT WILL IMPACT OTHER WORK)

*** WARN 001 *** 10 = RETURN CODE FROM CBLVCAT

** ** ** ** ** ** ** ** ** ** ** CBLVCAT 2.12.156 Licensed by Compute (Bridgend) Ltd +44 (1656) 652222 ** ** ** ** ** ** ** **
** Expiry: 2010-07-20 **

```

Notes

- 44

This example illustrates the setting of the absolute free space parameters **FRSPCI** and **FRSPCA**. Under normal circumstances the **GROWTH** parameter would be used to specify file growth. This is because **FREESPACE** specification using these two parameters, requires the user to reference file statistics for accurate results. They do, however, provide more control by allowing separate specification of the **FREESPACE** within the CIs and CAs, as opposed to general file growth.

```
LC DD=CBLI11      KEY=/SUMM
                   TUNE      FRSPCI=10      FRSPCA=5
```

Example: Absolute Freespace (CBL Ref: vmxtex6)

1. The file selected for tuning has a Data Set Name containing the string 'SUMM' from a Catalog referenced by CBLI11.
2. Absolute free space is requested as **10%** of each CI and **5%** of each CA, via the **FRSPCI** and **FRSPCA** parameters.
3. The Data CI size increases from **4096** to a more efficient **18432**.
4. The Allocation is optimised for the disk device and reduced **FREESPACE** values, recovering **22** cylinders.
5. The Index CI size is reduced from **4096** to **1536**, the minimum required assuming normal key compression. (See **KEY COMPRESSION** in **Additional VSAM Information**).
6. See the earlier **SEVerity block** description for an explanation of the SEVerity messages.

VSAM Monitoring

1. Regular Monitoring
2. Fine Tuning

Monitoring with CBLVCAT is incredibly simple as the **SEV** parameter can be used to restrict reports to files which are 'out of tune' (e.g. **SEV=3** reports on major problems only). To ask at the same time for tuning recommendations will introduce a negligible CPU overhead, so the **TUNE** parameter is also coded.

It is recommended you establish a regular monitoring interval, preferably just before the majority of your files are backed up prior to re-load, as this is generally when the files will be in their worst state of tune.

e.g.

```
LC DD=USERCT SEV=3 TUNE * Tune for problem files.
```

Regular Monitoring

In order to keep the performance gains achieved by CBLVCAT's tuning process, a regular job with subset **SEV=3** or **SEV=2** should be set up, using **IGN** parameters to bypass files that are not required (The latter category will probably consist of files that have not yet been tuned, together with those out-of-tune files whose size, or frequency of use, does not warrant re-defining and re-loading). This type of selection will produce a report limited to files which are starting to drift out of the optimal state of tune.

e.g.

```
LC DD=UCAT01 * Select catalog.
KEY=/GENERAL * Choose files with GENERAL in name.
SEV=2 * Report problem files.

LC DD=UCAT01 * Select same catalog.
IGN=ONLINE.CTL * Ignore files starting with ONLINE.CTL
KEY=ONLINE * Choose files starting with ONLINE
KEY=ACCOUNT * Choose files starting with ACCOUNT
LOCISZ=1024 * Set low csize limit.
HICISZ=4096 * Set high csize limit.
SEV=2 * Report problem files.
```

Fine Tuning

Once the bulk of your files are in reasonable shape, you may wish to turn your efforts to precise tuning in order to squeeze the most out of those files you consider critical. Once the files have been identified, run your tuning jobstreams at **SEV=1**, looking for the slightest imperfection.

You may be tempted to include fine tuning as part of the regular monitoring exercise. This is not recommended as tuning would always be recommended, even for minute file changes. The fine tuning exercise works best when directed at a few specific files at a time.

The following example may be used as a basis for developing a fine tuning job.

```
LC DD=UCAT01 * SELECT CATALOG.
KEY=FAST.BATCH * Select specific file for batch.
SEV=1 * Report minor conditions.
TUNE * Give fine tuning recommendations.
CIMIN=4096 * Restrict MINCI.
RECORDS=20000 * Set normal record count.
GROWTH=15 * Set expected growth from normal.

LC DD=UCAT01 * NEXT FILE - NEXT REPORT.
KEY=ONLINE.MASTER * Select specific file for on-line.
TYPE=KA * Select KSDS and AIX.
SEV=1 * Report minor conditions.
TUNE * Give fine tuning recommendations.
CISIZE=KEEP * Don't change CISIZE.
FRSPCI=10 * Specify few evenly distributed inserts.
FRSPCA=30 * Lots of pocket type inserts.
DEV=3380 * Give changed recommendations.
```

Reference [Guide to VSAM Tuning](#) and [A-Z Reference](#), for explanations of the parameters which will help you achieve specific tuning objectives.

Another item which is vital to achieving optimum performance from your fine-tuned files, is the proper use of JCL **BUFSP** (BUFND and BUFNI if possible). JCL **BUFSP**, ensures proper use of buffers for the mode of processing required by application programs. A combination of fine tuning and proper JCL **BUFSP** overrides will yield optimum performance (See [BUFFERSPACE](#) in [Additional VSAM Information](#)).

VSAM Modelling

1. Introduction
2. Example 26. Modelling a File
3. Example 27. Modelling for DASH Change

Introduction

CBLVCAT can be used to produce an output file containing the tuned IDCAMS define parameters based on a current file. This means that:

1. You don't have to go through the frustrating exercise of manually analysing file requirements for future projects. Just base your definitions on a file which resembles the required profile and add tuning parameters as required.
2. You can plan DASD requirements as soon as the decision to convert is made, not after the DASD have arrived.
3. You can plan Operating System conversions, with or without different DASD, long before you start experimenting with the new system, or before the related manuals arrive.

As modelling is really only a term used to show a particular use of file tuning, all relevant information is covered in the sections **Tuning Considerations** and **Tuning Output**. The following 2 examples illustrate the concept.

Example 26. Modelling a File

This example illustrates **modelling** an **ESDS** file.

e.g.

```
LC DD=CBLI11    KEY=CDBPV.AP.DATE.MASTER    DEFINE
TUNE    AVLRECL=500    MAXLRECL=500    RECORDS=15000
```

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales
(0S) VM/CMS=VMNBJ 17.11 WED 19 AUG 2009 PAGE 1

LISTVCAT DDNAME=CBLI11 DEFINE * Select catalog
SUBSET KEY=CDBPV.AP.DATE.MASTER * Select file
TUNE AVLRECL=500 MAXLRECL=500 * Tune output required
RECORDS=15000

ICF CAT CBLI11 (3390) TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CISIZE BUFSP CI/CA TIMESTMP
-----
CDBPV.AP.DATE.MASTER ESDS (R) 8051 **98.9** 7 7 1 42 4096 8192 12 2008/12/04 19.29.44
VOL1=CB9347

** SEV 2-27 ** TUNING FOR RECORDS/AVLRECL CHANGE REQUEST
* SEV 1-09 * FILE GETTING/IS FULL

*** WARN 016 *** LARGE ALLOC CHANGE

*** WARN 017 *** LARGE NRECS CHANGE

CBL TUNED
DATA (
CISZ (18432) - * NEW PHYREC SIZE=18432, CURRENT=4096
CYLINDERS (10,2) - * OPTIMISED FOR DEVICE GEOMETRY
RECORDSIZE (500,500) - * DEFINED AVLRECL=42
BUFFERSPACE (36864) ) * 36K MINIMUM FOR DIRECT PROCESSING

* USING AVLRECL=500 --- FILE CAPACITIES (NRECS) ---
* ----- TUNED ----- CURRENT -----
* PCNT PRIME SEC PCNT PRIME SEC
* --- --- ---
* 100 16K 3207 92 8148 1164

OPTIONAL JCL OVERRIDE FOR SEQ I/O
-----
BUFND=5 * (90K) FAST
BUFND=8 * (144K) URGENT
BUFND=23 * (414K) **TURBO** (BUT WILL IMPACT OTHER WORK)

*** WARN 001 *** 10 = RETURN CODE FROM CBLVCAT

** ** ** ** ** ** ** ** CBLVCAT 2.12.156 Licensed by Compute (Bridgend) Ltd +44 (1656) 652222 ** ** ** ** ** 
** Expiry: 2010-07-20 **

```

Example: Modelling an ESDS file (CBL Ref: vmxtex2)

Notes

The file **CDBPV.AP.DATE.MASTER** from the Catalog CBL11 is used as a model, with override values for **RECORDSIZE** (via **AVLRECL=500** and **MAXLRECL=500**) and allocation (via **RECORDS=15000**).

DEFINE is specified in conjunction with **TUNE** to produce an output file, to SYSPCH/SYSPUNCH, containing the tuned IDCAMS **DEFINE** parameters (see **IDCAMS DEFINE** and **Reorganisation** in **Guide to LIST Output** for full details).

The Data CI size increases from **8192** to **18432** in line with the supplied average record length.

Allocation is optimised for the characteristics of the disk device. This gives **CYL(10 2)** instead of **TRK(7 1)**.

See the **SEVerity block** description in **Tuning Output** for an explanation of the SEVerity messages and warning messages **WARN 016** and **WARN 017**.

Example 27. Modelling for DASD Change

Illustrates tuning a file for a different disk device. You are able to prepare for migration before you have the new DASD and/or operating system installed (to model for a different operating system simply specify **TUNE sys**).

e.g.

```
LC DD=CBLV10    KEY=PRODUCT.FS.PARAMETER  DEFINE
TUNE    DEV=3390
```

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales
(0S) VM/CMS=VMNBJ 21.23 WED 19 AUG 2009 PAGE 1
-----
LISTVCAT DDNAME=CBLV10 DEFINE * Select catalog.
SUBSET KEY=PRODUCT.FS.PARAMETER * Select file.
TUNE * Tune
DEV=3390 * New device
-----
USERCAT CBLV10 (3380) TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CISIZE BUFSP CI/CA TIMESTMP
-----
TOTAL PRIME SEC CI CA ---- /BLK/IMB ----- /IXL -----
PRODUCT.FS.PARAMETER KSDS (R) 2351 78.4 12 3 3 158 21,0 4096 14436 30 2008/04/04 15.59.57
IX 5 10.9 1 1 1 505 512 IXL=2 46
** SEV 2-25 ** INEFFICIENT DATA CISIZE
** SEV 2-28 ** TUNING FOR DEVICE CHANGE REQUEST
* SEV 1-14 * KSDS/AIX HAS NO IMBEDDED FREE SPACE
* SEV 1-18 * SEC EXTENTS EXIST
*** WARN 016 *** LARGE ALLOC CHANGE
CBL TUNED FOR DEV 3390
-----
DATA (
CISZ (18432) - * NEW PHYREC SIZE=18432, CURRENT=4096 (DEV CHANGE)
CYLINDERS (1,1) - * OPTIMISED FOR DEVICE GEOMETRY
BUFFERSPACE (40960) ) * 40K MINIMUM FOR DIRECT PROCESSING
INDEX (
CISZ (1024) ) *
* USING AVLRECL=158 --- FILE CAPACITIES (NRECS) ---
* PCNT TUNED --- CURRENT ---
* PRIME SEC PCNT PRIME SEC
* INIT LOAD 100 5220 5220 88 750 750
* FREE 0 0 0 0 0 0
* 100 5220 5220 88 750 750
* --- --- --- --- ---
OPTIONAL JCL OVERRIDE FOR SEQ I/O
-----
BUFND=5 * (90K) FAST
BUFND=8 * (144K) URGENT
BUFND=23 * (414K) **TURBO** (BUT WILL IMPACT OTHER WORK)
*** WARN 001 *** 10 = RETURN CODE FROM CBLVCAT
*****
** ** ** ** CBLVCAT 2.12.156 Licensed by Compute (Bridgend) Ltd +44 (1656) 652222 ** ** ** **
** Expiry: 2010-07-20 **

```

Example: Modelling for DASD Change (CBL Ref: vmxtex5)

Notes

The file **PRODUCT.FS.PARAMETER** from the Catalog CBLV10 is used as a model and tuned for a new device (3390) using the **DEV** parameter.

DEFINE is specified in conjunction with **TUNE** to produce an output file, to SYSPCH/SYSPUNCH, containing the tuned IDCAMS **DEFINE** parameters (see **IDCAMS DEFINE** and **Reorganisation** in **Guide to LIST Output** for full details).

The Data CI size increases from **4096** to a more efficient **18432**.

The Index CI size increases from **512** to **1024** to eliminate inefficiency.

Allocation is optimised for the characteristics of the **new** disk device giving **CYL(1 1)** instead of **TRK(3 3)**.

See the **SEVerity block** description in **Tuning Output** for an explanation of the SEVerity messages and warning message **WARN 016**.

Summary of Syntax

In the following tables the syntax of separating keywords with a vertical bar ("|"), is used to indicate that the keywords are mutually exclusive.

REPORT Summary

Command		**	Common Parameters			
REPORT	VCAT or VTOC	(SORT or SORTD)	BLKSIZE	DSN	TYPE	VOLUME
			CISIZE	*STOPAFT		
			VCAT only			
			ALLOCP	ENTRY	NRECS	SMS
			ALLOCS	EXCPS	NSEC	SMSD
			ALLOCT	FREEBYTES	PCNT	SMSM
			ALLOCU	FRSP	PHYREC	SMSS
			ALLOC3	GGEN	RECDL	SPLITCA
			ALLOC4	GMAX	RECINP	SPLITCI
			ASSOC	GVER	RECINS	SPLITS
			AVRL	HIALLRBA	RECSTATS	TIMESTMP
			BUFSP	HIUSERBA	RECUPD	VOL1
			BUFSP/IXL	IMB	RKP	VOL2
			CATALOG	IXL	S/C	VOL3
			CI/CA	KL	SEVL	VOL4
			COMPONENT	KL/BLK/IMB	SHR	VOL5
			DEFINED	LMAX		
			VTOC only			
			ACCESSED	CYL/HD	LRECL	USED
			ALLOC	EXPIRES	RECFM	
			CREATED	INFO	START	

Notes

1. See **REPORT** in the **A-Z Reference**.
2. ** **SORT** and **SORTD** are special report parameters as they are **positional keywords**. They effect a **SORT** (descending in the case of **SORTD**) based on the parameters which follow them in the list. They can therefore appear anywhere within a REPORT command parameter list.
3. * The **STOPAFT** parameter is used to limit print output and can only be used in conjunction with the **SORT** and **SORTD** parameters.

OPTION Summary

Command	Common Parameters					
OPTION OPTIONS	CBLCLINE=nn CBLVPCPF=nn CBLVCSW1=X'xx' HEAD=string CBLVCALE=nn CBLVCPCT=nn CBLVCSW2=X'xx' LINESPACE=nn CBLVCALEW=nn CBLVPCPV=nn CBLVCSW3=X'xx' OVLAY CBLVCEXT=nn CBLVRCM=X'xx' CBLVCSW4=X'xx' PAGEDEPTH=nn CBLVCFN=xxx CBLVCSCA=nn CBLVCSW5=X'xx' PAGEWIDTH=nn CBLVCONL=X'xx' CBLVCSCI=nn CBLVCSW6=X'xx' RAW=fname CBLVCONS=xxx CBLVCSPA=n CBLVCSW7=X'xx' SUMMARY CBLVCONT=nnnn CBLVCSW8=X'xx' TOTALS CBLVCSW9=X'xx'					
	LISTVCAT only					
	ALIAS	NOALIAS	INDEX	NOINDEX	PRTCAP	NOPCAP
	ASSOC	NOASSOC	ISC	NOISC	PRTJCL	NOPJCL
	DEFINE	NODEFINE	LMAX	AVRL	PRTSEV	NOPSEV
	EXCPS	CI/CA	MOUNT	NOMOUNT	SHR	S/C
	GDGDSN	NOGDGDSN	OVLAY	NOOVLAY	TIMESTAMP	DEFINED
	GDGRPT	NOGDGRPT	PCNT	UNUSED	VOLINFO	NOVOL
	LISTVTOC only					
	NOFREE	FREE	FREETAB	EXPD	NOEXPD	PERM
					NOPERM	

Notes

1. See **OPTION** in the [A-Z Reference](#).

LISTVCAT Summary

			OPTION	Any of the applicable options from the OPTION table.	
				LOBLK LOCYL LOTRK=nnn HIBLK HICYL HITRK=nnn	
	REF=xx.xx (MVS only) or KEY=xx.xx (MVS only)	(FAIL=xxx PASS=pwd EJECT MERGE)	SUBSET	KEY=string IGN=string LODATE=date LOCISZ=cisize	KEY=/string IGN=/string HIDATE=date HICISZ=cisize
LISTVCAT	or DD=fname			SEV=n SPANNED TOTALLOC=nnn TYPE=xxx UNALLOC=nnn	SPLIT=nn NRECS=nnn SECALLOC=nnn VOL=volser CLASS=n
LISTCAT	or VVDS=vser (ICF only)			COMPRESSED EXT-ADDR EXTENDED STRIPED XVSAM	
LISTC	or CAT=xx.xx (VSE only)				
LC					

Notes

1. See **LISTVTCAT** in the [A-Z Reference](#).
2. **OPTION**, **SUBSET** and **TUNE** can all be specified on the same **LISTVTCAT** operation.

LISTVTOC Summary

LISTVTOC LISTV LIST LV L	VSE only		(FAIL=xxx EJECT MERGE)	* SORT	DATE DSN EXP EXT EXTPRIME SIZE
	DEV=xxx or SYS=xxx	(VOL=vser) or (OWN=ownr)		OPTION	Any applicable OPTIONS from the OPTIONS table.
	VOL=volser				
	MVS only				KEY=string KEY=/string IGN=string IGN=/string
	DDNAME=fname or DEV=unitname or VOL=volser			SUBSET	HIEXP=date LOEXP=date LODATE=date HIDATE=date LOBLK LOCYL LOTRK=nnn HIBLK HICYL HITRK=nnn TYPE=xxx EXTNO=nn

Notes

1. See **LISTVTOC** in the [A-Z Reference](#).
2. **SORT**, **OPTION** and **SUBSET** can all be specified on the same **LISTVTOC** operation.
3. * Only one of these sort fields can be specified on a **LISTVTOC** operation.

LISTLABL Summary

VSE only	LISTLABL LISTL LL	* No parameters, OPTIONS or SUBSETS
----------	-------------------------	-------------------------------------

Notes

1. See **LISTLABL** in the [A-Z Reference](#).

VTOC Modification Summary

VSE only	DEL D	DEV=cuu SYS=nnn	DSN=xxx.xx ALLFILES=YES	OWN=xxx	EJECT
	MOD M	VOL=volser	DSN=xxx.xx NEWDSN=xxx.xx EXP=TEMP EXP=PERM NEWVOL=volser NEWOWN=xxxxxxx		LIST=YES CANCEL FAIL=IGNORE EOJ

Notes

1. See **DEL** and **MOD** in the **A-Z Reference**.
2. If **ALLFILES=YES** is used, the **VOL=volser** parameter is **mandatory**.

Other Commands

QUERY Q	CBLNAME
EJECT EJ	* Unconditional new page (command not printed)

Notes

1. See **QUERY** and **EJECT** in the **A-Z Reference**.

LISTVCAT Output Fields

1. **Standard Catalog Report**
2. **Customised Catalog Report**

Standard Catalog Report

For this table the assumption is made that the default report fields are those set in the CBL supplied **CBLNAME**.

VCAT Fieldname	Std Pos	Field Heading	Field Format	Dflt Width	OPTION Required
n/a (1)	041	PCNT ---- ALLOC xxxCKS --- TOTAL PRIME SEC	**nn.n** + 3 alloc fields	32	PCNT*
n/a (2)	041	----- ALLOCATED xxxCKS ---- TOTAL UNUSED PRIME SEC	4 alloc fields	32	UNUSED
AVRL	078	AVRL	+nnnnn*	7	AVRL
BUFSP/IXL	100	BUFSP /IXL	+nnnnn* IXL=nn	7	
CI/CA	107	CI/CA	+nnnnn*	6	CI/CA
CISIZE	093	CISIZE	+nnnnn*	7	
DEFINED	113	DEFINED	*ccyy/mm/dd	9	DEFINED
DSN (22)	001	USERCAT vvvvvv (nnnn)	xxxxxxxxxx...	44	
EXCPS	107	EXCPS	+nnnnK*	7	EXCPS*
FRSP	072	FRSP	+nn+nn*	7	
KL/BLK/IMB	085	CI CA KL,RKP /BLK/IMB	nnn,nnn +nnnnnn	7	
LMAX	078	LMAX	+nnnnnV	7	LMAX*
NRECS	030	NRECS	+nnnnnnnn+	10	
TIMESTMP	112	TIMESTMP	*ccyy/mm/dd hh.mm.ss	20	TIMESTMP*
TYPE	024	TYPE	xxxxxxxx	8	

Notes

1. See **LISTVCAT** in the **A-Z Reference**.
2. Where there is a field **OPTION** within the standard report, the default setting is indicated with an "*" in the **OPTION required** column.
3. n/a (1) - When the option **PCNT** is used, the **PCNT** column is displayed, together with three allocation columns. This is the equivalent of specifying **ALLOC3** and **PCNT** as parameters for the customised **REPORT** command.
4. n/a (2) - When the option **UNUSED** is used, four allocation columns are displayed. This is the equivalent of specifying **ALLOC4** as a parameter to the **REPORT** command.
5. "DSN (22)" above indicates that the standard **DSN** field is 22 bytes wide. The printing of longer names is governed by the **OVLAY/ NOOVLAY** option.

Customised Catalog Report

Fields within a customised report are chosen with the **REPORT** command and its parameters. There is no standard position for these fields as their position within the parameter list governs the report layout. All the **VCAT** fields in the **Standard Catalog Report** table above are also available to the **REPORT** command (the **VCAT fieldname** is used as the **REPORT** parameter - ignore the **OPTION Required** column and see notes after this table).

REPORT Parameter	Field Heading	Field Format	Dflt Width
ALLOC3	---- ALLOC xxxCKS --- TOTAL PRIME SEC	3 alloc fields	26
ALLOC4	----- ALLOCATED xxxCKS ----- TOTAL UNUSED PRIME SEC	4 alloc fields	32
ALLOCP	ALLOC	+nnnnnnnn	8
ALLOCS	PRIME	+nnnnnn*nn	10
ALLOCT	ALLOC	+nnnnnnnn	8
ALLOCU	TOTAL ALLOC	+nnnnnn	6
ASSOC	ASSOC	xxxxxxxxxx...	44
BLKSIZE	BLKSIZE	+nnnnnn*	7
BUFSP	BUFSP	+nnnnnn*	7
CATALOG	CATALOG	xxxxxxxxxx...	44
COMPONENT	COMPONENT	xxxxxxxxxx...	44
DEFINED	DEFINED	ccyy/mm/dd*	11
ENTRY	ENTRY	xxxxxxxxxx...	44
FREEBYTES	FSPC BYTES	+nnnnnnnnnn	11
GEN	GEN	nnnn	4
GMAX	GMAX	nnn	3
GVER	VER	nn	2
HIALLRBA	HI ALL RBA	+nnnnnnnnnn	11
HIUSERBA	HI USE RBA	+nnnnnnnnnn	11
IMB	IMB/REP	--IMB-- --REP--	7
IXL	IXL	+nn	3
KL	KL	nnn	3
NSEC	NSEC	+nnn	4
PCNT	PCNT	*nn.n**	8
PHYREC	PHYREC	+nnnnnn*	7
RECDEL	RECS	+nnnnK	6
RECINP	DELETED RECS	+nnnnK	6
RECINS	INPUT RECS	+nnnnK	6
RECSTATS	INSRTD	+nnnnK (4 times)	24
RECUPD	-- RECORD STATISTICS -- RECS	+nnnnK	6
RKP	UPDATD	+nnn	4
S/C	RKP	*n n*	5
SHR	S/C	*n,n*	5
SEVL	SHR	n-nn	4
SMS	SEVL	xxxxxxxx (3 times)	26
SMSD	SMS DATA SMS MNGT SMS STOR	xxxxxxxx	8
SMSM	SMS DATA	xxxxxxxx	8
SMSS	SMS MNGT	xxxxxxxx	8
SPLITCA	SMS STOR	+nnnn	5
SPLITCI	SPLIT	+nnnn	5
SPLITS	CI SPLITS	+nnnn (2 times)	10
TIMESTMP	CI CA	ccyy/mm/dd hh.mm.ss*	20
VOL1	TIMESTMP	nnnnnn	6
VOL2	VOLSER	nnnnnn xxxxxxxx	15
VOL3	VOLSER DEVICE	nnn nnnnnn	10
VOL4	SEQ VOLSER	nnn nnnnnn xxxx	19
VOL5	SEQ VOLSER DEVICE	nnn nnnnnn xxxx nnn	23
VOLUME	SEQ VOLSER DEVICE FSEQ	volser	6

Notes

1. See **LISTVCAT** and **REPORT** in the **A-Z Reference**.
2. **ALLOC3** and **ALLOC4** form part of the standard report depending upon which (mutually exclusive) **OPTION**s are in force. **ALLOC3** forms part of the output (with the additional **PCNT** column) if the option **PCNT** is in force, whereas **ALLOC4** forms part of the output if the option **UNUSED** is in force.
3. For a Customised report, the **DSN** field has a default width of 44. If the **DSN** parameter is supplied with a numerical value to override this width and this value is less than 44, the whole data set name will be printed and all subsequent information will continue on the next line of the report (unless **SORT** has been used in which case the data set name will be truncated accordingly).

LISTVTOC Output Fields

1. **Standard VTOC Report**
2. **Customised VTOC Report**

Standard VTOC Report

VTOC Fieldname	Std Pos	Field Heading	Field Format	Dflt Width
ALLOC	047	ALLOC	+nnnnnn	7
BLKSIZE	078	BLKSIZE	+nnnnnn	7
CISIZE (for FBA)	033	CISIZE	+nnnnn	6
CREATED	100	CREATED	ccyy/mm/dd	10
CYL/HD (for CKD)	023	CYL/HD LIMITS	+nnnn/nn+nnnn/nn	16
DSN (21/31)	001	VTOC OF VVVVVV	xxxxxxxxxx...	44
EXPIRES	067	EXPIRES	*ccyy/mm/dd	11
INFO	112	INFO	xxxxx...	21
LRECL	085	LRECL	+nnnnn	6
RECFM	093	RECFM	xxxxx	5
START	039	START	+nnnnnnn	8
TYPE	061	TYPE	xxxx *EXT=n*	7
USED	054	USED	+nnnnnn	7

Notes

1. See **LISTVTOC** in the **A-Z Reference**.
2. "DSN (21/31)" indicates that the standard **DSN** field is 21 bytes wide (For CKD) and 31 bytes wide (For FBA). The printing of any longer names is governed by the setting of the **OVLAY/ NOOVLAY** option.

Customised VTOC Report

Fields within a customised report are chosen with the **REPORT** command and its parameters. There is no standard position for these fields as their position within the parameter list governs the report layout. All the **VTOC** fields in the **Standard VTOC Report** table above are also available to the **REPORT** command (the **VTOC fieldname** is used as the **REPORT** parameter).

REPORT Parameter	Field Heading	Field Format	Dflt Width
ACCESSED	ACCESSED	ccyy/mm/dd	10
EXPIRES	EXPIRES	ccyy/mm/dd*	11
VOLUME	VOLUME	volser	6

Notes

1. See **LISTVTOC** and **REPORT** in the **A-Z Reference**.
2. For a Customised report, the **DSN** field has a default width of 44. If the **DSN** parameter is supplied with a numerical value to override this width and this value is less than 44, the whole data set name will be printed and all subsequent information will continue on the next line of the report (unless **SORT** has been used in which case the data set name will be truncated accordingly).

Abbreviations and Synonyms

The following abbreviations are supported. Abbreviated and full length keywords may be mixed at will.

ALL	DEV=ALL	LIST	LISTVTOC	OPT	OPTIONS
ALL	REF=ALL	LISTC	LISTVCAT	OPTION	OPTIONS
AVRECL	AVLRECL	LISTCAT	LISTVCAT	OWNER	OWN
D	DEL	LISTL	LISTLABL	PD	PAGEDEPTH
DD	DDNAME	LISTV	LISTVTOC	PW	PAGEWIDTH
DEF	DEFINE	LL	LISTLABL	Q	QUERY
EJ	EJECT	LV	LISTVTOC	SORTA	SORT
EXTNUM	EXTNO	LS	LINESPACE	TIMESTAMP	TIMESTMP
L	LISTVTOC	M	MOD	TY	TYPE
LC	LISTVCAT	MAXRECL	MAXLRECL		

Notes

If the synonym **ALL** is used, its meaning is dependent upon the command it follows (i.e. **DEV=ALL** for **LISTVTOC**, or **REF=ALL** for **LISTVCAT**).

A-Z Reference

The following table contains all CBLVCAT's Commands and Parameters (Commands are highlighted).

! (Separator)	CBLVCSW8	HEAD	NOEXPD	SEV
* (Comment)	CBLVCSW9	HIALLRBA	NOFREE	SEVL
ACCESSED	CI/CA	HIBLK	NOGDGDSN	SHR
ALIAS	CIMAX	HICISZ	NOGDGRPT	SMS
ALLFILES	CIMIN	HICYL	NOINDEX	SMSD
ALLOC	CISIZE	HIDATE	NOISC	SMSM
ALLOC3	CLASS	HIEXP	NOMOUNT	SMSS
ALLOC4	COMPONENT	HITRK	NOOVLAY	SORT
ALLOCP	COMPRESSED	HIUSERBA	NOPCAP	SORTD
ALLOCS	CREATED	IGN	NOPERM	SPANNED
ALLOCT	CYL/HD	IMB	NOPJCL	SPLIT
ALLOCU	CYLMAX	INDEX	NOPSEV	SPLITCA
ASSOC	DDNAME	INFO	NOVOL	SPLITCI
AVLRECL	DEFINE	ISC	NRECS	SPLITS
AVRL	DEFINED	IXL	NSEC	START
BLKSIZE	DEL	KEY	OPTIONS	STOPAFT
BUFSP	DEV	KL	OVLAY	STRIPED
BUFSP/IXL	DSN	KL/BLK/IMB	OWN	SUBSET
CAT	EJECT	LINESPACE	PAGEDEPTH	SUMMARY
CATALOG	ENTRY	LIST	PAGEWIDTH	SYS
CBLCLINE	EXCPS	LISTLABL	PASS	TIMESTAMP
CBLVCALE	EXP	LISTVCAT	PCNT	TOTALLOC
CBLVCALW	EXPD	LISTVTOC	PERM	TOTALS
CBLVCEXT	EXPIRES	LMAX	PHYREC	TUNE
CBLVCFN	EXT	LOBLK	PRTCAP	TYPE
CBLVCONL	EXT-ADDR	LOCISZ	PRTJCL	UNALLOC
CBLVCONS	EXTENDED	LOCYL	PRTSEV	UNIT
CBLVCONT	EXTNO	LODATE	QUERY	UNUSED
CBLVCPCF	FAIL	LOEXP	RAW=fname	USED
CBLVCPCT	FREE	LOTRK	RECDEL	VCAT
CBLVPCV	FREEBYTES	LRECL	RECFM	VOL
CBLVCRM	FREETAB	MAXLRECL	RECINP	VOL1
CBLVCSCA	FRSP	MERGE	RECINS	VOL2
CBLVCSCI	FRSPCA	MOD	RECORDS	VOL3
CBLVCSPA	FRSPCI	MOUNT	RECSTATS	VOL4
CBLVCSW1	GDGDSN	NEWDSN	RECUPD	VOL5
CBLVCSW2	GDGRPT	NEWOWN	REF	VOLINFO
CBLVCSW3	GGEN	NEWVOL	REPORT	VOLUME
CBLVCSW4	GMAX	NOALIAS	RKP	VTOC
CBLVCSW5	GROWTH	NOASSOC	S/C	VVDS
CBLVCSW6	GVER	NODEFINE	SECALLOC	XVSAM
CBLVCSW7				

! (Separator Character)

```
LISTVTOC  SYS=022  !LISTVTOC SYS=023  !LISTVTOC SYS=024
LISTVCAT  DD=VSESPUC  * VSE User Catalog  !LISTVCAT DD=CBLMCT
```

The control statement separator character is defined in CBLNAME which is distributed with "!" (exclamation mark - EBCDIC X'5A') as the default.

This allows the user to code multiple CBLVCAT statements on a single SYSIN/SYSIPT input record. It defines logical end of the CBLVCAT control statement, is not considered to be part of the record and not printed in the SYSPRINT/SYSLST output.

* (Comment)

```
REPORT VCAT DSN 33 ALLOC3 NSEC          * Catalog Report Fields.
REPORT VTOC DSN TYPE CREATED ACCESSED EXPIRES * Catalog Report Fields.

** Generate Lists **
LISTVTOC VOL=CBLM03          * User Volume CBLM03.
LISTVCAT KEY=CBL.DIST        * All cataloged data sets with prefix "CBL.DIST".
```

An asterisk (X'5C' EBCDIC) in position 1, or in any position which is preceded by a blank and is not enclosed in quotes, defines the start of comment data. The comment data ends at the end of SYSIN/SYSIPT input record or at a command separation character ("!" by default).

Comment data is ignored by CBLVCAT for syntax purposes.

ACCESSED (nn)

(REPORT VTOC)

```
REPORT VTOC DSN CREATED ACCESSED
```

For **MVS** systems only, **ACCESSED** displays the date the file was last accessed.

The column width is 10, the format is 'ccyy/mm/dd' and the heading is **ACCESSED**.

Notes

If CBLVCSW9=X'01' is set on (CBLNAME option V2digitYear=Yes) then the format of the ACCESSED field is 'yy/mm/dd'.

ALIAS

(LISTVCAT OPTION)

```
OPTION ALIAS          * Override CBLVCSW1=X'08'
LC DD=CBLI02
```

For **MVS** systems only. If **NOALIAS** is the current installation default, **ALIAS** can be used to display the ALIAS items as separate entries in the report (They will still appear as a reference for the appropriate **USERCAT**). **ALIAS** and **NOALIAS** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **ALIAS** is the default (**CBLVCSW1** bit **X'08'** is on). **NOALIAS** can be made the default by changing this setting.

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales										(OS)	VM/CMS=VMNEJ	22.05 WED 19 AUG 2009	PAGE	1
LISTVCAT DD=CBLI02 TYPE=UX														
ICF CAT CBLI02 (3380)	TYPE	NRECS	PCNT	----	ALLOC	TRACKS	----	FRSP	LMAX	KL,RKP	CISIZE	BUFSP	CI/CA	TIMESTMP
		-----	----		TOTAL	PRIME	SEC	CI CA	----	/BLK/IMB	-----	/IXL	----	-----
CAT.ICF.MASTCAT.CBLI02.LONG	ICFCAT				VOL1=CBLI12	3380								2007/02/27
CAT.ICF.USERCAT.CBLI12.LONG	ICFCAT				VOL1=CBLI12	3380		ALIAS= M1110AA						2007/06/24
CAT.ICF.USERCAT.CBLI22	ICFCAT				VOL1=CBLI22	3380		ALIAS= M1112AA						2007/06/24
CAT.ICF.USERCAT.CBLI32	ICFCAT				VOL1=CBLI32	3380		ALIAS= AC1001 CICS161A CINDEXD						2007/06/24
								CINDEXF1 C161DAA C161TAA						
								NCCDZN NCCSORE NCCTZN						
								NCC23725						
CINDEXD	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
CINDEXF1	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
CICS161A	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
C161DAA	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
C161TAA	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
MVSSORE	ALIAS OF	CAT.ICF.USERCAT.CBLI02												
M1110AA	ALIAS OF	CAT.ICF.USERCAT.CBLI12												
M1112AA	ALIAS OF	CAT.ICF.USERCAT.CBLI22												
NCCDZN	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
NCCSORE	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
NCCTZN	ALIAS OF	CAT.ICF.USERCAT.CBLI32												
NCC23725	ALIAS OF	CAT.ICF.USERCAT.CBLI32												

Example: LISTVCAT ALIAS Output (CBL Ref: vmxalia)

ALLFILES=YES**(DEL)**

DEL DEV=161 VOL=TEST05 ALLFILES=YES

For **VSE** systems only, **ALLFILES=YES** selects all files on the volume for **deletion** (including any unexpired datasets). **ALLFILES=YES** and **DSN=xxx** are mutually exclusive.

Select the device using the **DEV** and/or **SYS** parameters and check the volume via the **VOL** parameter and, if required, the **OWN** parameter. The **VOL** parameter is **mandatory**, as a safety mechanism to ensure that the correct volume is mounted.

ALLOC (nn)**(REPORT VTOC)**

REPORT VTOC DSN ALLOC START

Display the space allocated to a file or free space extent.

The column width is 7, the format is +nnnnnn (tracks for CKD or blocks for FBA) and the heading is **ALLOC**. A total is provided for this column (ALLOC also forms part of the standard report).

ALLOCP (nn)**(REPORT VCAT)**

REPORT VCAT DSN 25 TYPE SORTD ALLOCT ALLOCP ALLOCS

Display the primary allocation (see **ALLOCT** for an example).

The column width is 8 and the format is either +nnnnnnn (tracks for CKD or blocks for FBA) or C=nnn (cylinders for CKD). The heading is **ALLOC PRIME** and a total is provided (This column is also displayed within the allocated field of the standard report).

Notes

If a file extends onto a **CANDIDATE** volume, a second primary allocation is acquired.

A primary allocation can have multiple extents (see **NSEC** to display number of extents).

ALLOCS (nn)**(REPORT VCAT)**

REPORT VCAT DSN 25 TYPE SORTD ALLOCT ALLOCP ALLOCS

Display the **secondary allocation**.

The column width is 10 and the format is either +nnnnnn*nn (tracks for CKD or blocks for FBA) or C=nnn (cylinders for CKD only). The heading is **ALLOC SEC** and a total is provided for this column (This column is also part of the allocated field of the standard report).

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1
o -----
REPORT VCAT DSN 35 ALLOCS 12 NSEC
o
LISTVCAT DD=CBLV09
          NOINDEX NOVOL NOASSOC
o SUBSET SECALLOC=4 * if at least 4 secondary extents
o
o USERCAT CBLV09 (3380)
-----
o IAS.LV0.ICM01V.COMMISSN.MASTER      C=60*** 11
IAS.LV0.IFM01.FX.LEDGER                C=1*** 15
IAS.LV0.IGM01.RR-AC.HEADERS            C=10*4 4
o IAS.LV0.IGM02.GENERAL.LEDGER        C=100*5 5
IAS.LV0.IGM03.GL.HISTORY                C=200*9 9
IAS.LV0.IGM05.SETTMENT.MASTER          C=25*6 6
o IAS.LV0.INLNF.INVEST.LEDGER         C=100*7 7
IAS.LV0.INM32.EXAMINER                 C=5*7 7
IAS.LV0.IXM10.INC-ENT.EXTRACT           C=1*6 6
o IAS.LV0.PVM01.USER.PRICE             C=5*5 5
IAS.LV0.RDM01.MLINK.INLNF              C=1*** 11
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: ALLOCS and NSEC fields (CBL Ref: vmxnsec)

Notes

If **0*** is displayed (see example for **ALLOCS**), it indicates that the file has been defined with no secondary allocation specified (This may be appropriate if the file is static). The asterisk will **not** appear if **GROWTH=0** is displayed at tuning time.

All extents other than the first extent of the first Primary Allocation are Secondary extents. Therefore, if a primary allocation consists of 3 extents, the number of **secondary extents** is 2 plus the number of extents reserved by any **secondary allocation** plus the number of extents reserved by any further **primary allocations** (See note in **ALLOCP** above). In the above example, **C=25*6** does **not** necessarily mean 6 secondary allocations of 25 cylinders each.

ICF and VSAM support up to 123 extents, except for VSAM cataloged REUSE or UNIQUE files which are restricted to 16 extents per volume.

One asterisk (**nnn*n**) indicates that the number of secondary extents has reached the **warning threshold** limit. The value after the asterisk shows how many times secondary extents have been acquired (The warning threshold limit is **4** by default, but can be set to another value in **CBLNAME** using the **CBLVCALW** field). **SEV 2-19** would also be activated.

Three asterisks (**nnn*****) indicate that the number of secondary extents has reached the **error threshold** limit (This is **10** by default, but can be set to another value in **CBLNAME** using the **CBLVCALE** **SEV 3-19** would also be activated, however, the number of extents **is not** displayed. The **NSEC** field would be needed if a count of the secondary extents was required.

ALLOCT (nn)

(REPORT VCAT)

```
REPORT VCAT DSN 25 TYPE SORTD ALLOCT ALLOCP ALLOCS
```

Display the current total space allocation of a component.

The column width is 8 and the format is either +nnnnnnn (tracks for CKD or blocks for FBA) or C=nnn (cylinders for CKD only). The heading is **ALLOC TOTAL** and a total is provided for this column (This column is also part of the allocated field of the standard report).

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1					
REPORT VCAT DSN 25 TYPE SORTD ALLOCT ALLOCP ALLOCS					
LISTVCAT DD=CBLV10 LINESPACE=1					
USERCAT CBLV10 (3380)					
	TYPE	ALLOCT	ALLOCP	ALLOCS	
	----	TOTAL	PRIME	SEC	
TEST.TEMP.HISTORY.BASE	SAM (R)	TEMP	9	9	
DEFAULT.MODEL.ESDS.SAM	SAM (R)	TEMP	1	1	
PRODUCT.FS.CICSXX.MASTER	SAM (R)	C=9	C=9	C=9	
PRODUCT.FS.REPORT.TEST01	SAM (R)	C=9	C=9	C=9	
PRODUCT.FS.HIST.NEWMAS	SAM (R)	C=5	C=5	C=5	
TEST.GRP1.USER.CATALOG	KSDS	87	87	3	
	IX	3	3	3	
PRODUCT.FS.PARAMETER	KSDS (R)	12	3	3	
	IX	1	1	1	
PRODUCT.HIST.001.EXTRACT.ESDS	(R)	5	5	5	
		---	---	---	
		453	454	370	
		---	---	---	
CBLVCAT IS LICENSED BY COMPUTE (BRIDGEND) LTD 0656-652222, 0656-656466					
** EXPIRY DATE --- 6 JUN 1995 **					

Example: LISTVCAT allocation totals (CBL Ref: vmxallt)

Notes

This column is **not** always the sum of the **PRIME** and **SEC** columns. It is either the same as the **PRIME** value (if no secondary allocations have occurred) or the **PRIME** value plus a multiple of the **SEC** value (if secondary allocations have occurred).

However, each time a file extends onto a candidate volume, an **additional primary allocation** is acquired. In this case the total would simply be a multiple of the **PRIME** column (or the total could be a multiple of both **PRIME** and **SEC** columns if secondary allocations had also been acquired). See **VOLINFO** for the display of volume information.

Files shown as **TEMP** are **temporary reusable files (VSE only)**, which means that they have been defined as **WORK files**. These files are not allocated until they are opened for output, at which time the required space is taken from unused remaining space. The total blocks/tracks these files will occupy is reported separately at the end of the report (see **Example 2 in Guide to LIST Output**). It is therefore possible to see if there is enough space left for all the files to be open at once (However, it is unlikely that this would be required).

ALLOCU (nn)

(REPORT VCAT)

REPORT VCAT DSN 25 TYPE SORTD ALLOCT ALLOCU

Display the amount of space which has been over allocated at file definition time, based on the current file size.

The column width is 6 and the format is either +nnnnn (tracks for CKD or blocks for FBA) or C=nnn (cylinders for CKD only). The heading is **ALLOCT UNUSED** and a total is provided for this column (This column is also part of the allocated field of the standard report if option **UNUSED / PCNT** is set to **UNUSED**).

Notes

If **ALLOCU** is large and the file is static it could indicate disk space which is reserved but will never be used.

If there have been a significant number of inserts causing splits, the file, when reloaded, can also show a high **ALLOCU**. Tuning will address this problem.

ALLOC3 (nn)

(REPORT VCAT)

REPORT VCAT DSN 25 TYPE SORTD ALLOC3 TIMESTMP

Display the 3 columns **TOTAL**, **PRIME** and **SEC**.

The column width is 26, comprising the **ALLOCT**, **ALLOCP**, **ALLOCS** columns (described earlier) and the heading is ---- **ALLOCT xxxxxS** ----, where "xxxxx" is "TRACK" (CKD) or "BLOCK" (FBA). The columns which comprise **ALLOC3** are also displayed as part of the standard report (see below).

Extent messages can also be displayed in the the **SEC** column of this field (see also **NSEC**).

T CBLV03 (3370)	TYPE	NRECS	PCNT	---- ALLOC	BLOCKS	----	FRSP	LMAX	KL,RKP	C
-----		----	----	TOTAL	PRIME	SEC	CI CA	----	/BLK/IMB	----
/LUPD.LIBRARY	ESDS	2990	**FULL**	48360	48360	0*		8185		/
\GAHIST.VSAM	ESDS	93073	**98.5**	18600	8184	1488*7		100		/
/URNEY.INX	KSDS	74	3.5	62	62	0*	44 0	14	3,10	/
\	IX	1	6.7	62	62	0*		2041		/
/.SPIERMASK.CLUST	KSDS	9778	26.4	5580	744	124***20	10	37	25,0	/
						***	39 SEC	EXTENTS		***

Example: LISTVCAT secalloc warnings (CBL Ref: vmxsecw)

Notes

One asterisk (nnn*n) indicates that the number of secondary extents has reached the **warning threshold** limit. The value after the asterisk shows how many times secondary extents have been acquired (The warning threshold limit is **4** by default, but can be set to another value in the CBLNAME module using the **CBLVCALW** field). **SEV 2-19** is also activated.

Three asterisks (**nnn*****) indicate that the number of secondary extents has reached the **error threshold** limit (This is **10** by default, but can be set to another value in the CBLNAME module using the **CBLVCALE** field). **SEV 3-19** is also activated.

For the **standard report only**, when this limit is reached a warning line is also printed indicating the number of secondary extents (see above). If this information is required for a customised report the **NSEC** field should be used. Actual extent information can also be shown depending upon the setting of the CBLNAME module using the **CBLVTEXT** field).

Zero flagged with an asterisk on the right (**0***) is a secondary allocation warning message, meaning that the file has been defined with no secondary allocation allowed (This may be appropriate if the file is static). The asterisk will not appear if **GROWTH=0** is specified at tuning time.

ALLOC4 (nn)

(REPORT VCAT)

REPORT VCAT DSN 25 TYPE SORTD ALLOC4 TIMESTMP

Display the 4 columns **TOTAL**, **UNUSED**, **PRIME** and **SEC**.

The column width is 32, comprising the **ALLOC**, **ALLOCU**, **ALLOCP**, **ALLOCS** columns (described earlier) and the heading is **-----ALLOCATED xxxxxS-----**, where "xxxxx" is "TRACK" (CKD) or "BLOCK" (FBA). The columns which comprise **ALLOC4** also form part of the standard report if option **UNUSED / PCNT** is set to **UNUSED**).

See Notes in ALLOC3 above.

ASSOC

(LISTVCAT OPTION)

OPTION	EXCPS	ASSOC	CI/CA
--------	-------	-------	-------

If **NOASSOC** is the current installation default, **ASSOC** can be used to display file association information on the Catalog report (**ASSOC** and **NOASSOC** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **ASSOC** is the default (**CBLVCSW1** bit **X'80'** is on). **NOASSOC** can be made default by changing this switch.

Note

For VSAM (non ICF) catalogs, a **SUBSET** using **KEY** and/or **IGN**, will process much more quickly if **NOASSOC** is specified (otherwise CBLVCAT still processes all the files). ICF catalogs have **ASSOC** information included within the cluster 'sphere' record, so **ASSOC/NOASSOC** has little impact on performance.

ASSOC (nn)

(REPORT VCAT)

REPORT VCAT SORT ASSOC DSN

Display the name of the user catalog (or non-VSAM entry) for which an **ALIAS** has been defined.

The column width is 44 and the column heading is **ASSOC.**

AVLRECL=nnn/KEEP**(LISTVCAT TUNE)**

AVRECL=nnn/KEEP

```

LC DD=IJSYSUC KEY=PROD.FILE * Select the Catalog and File.
      TUNE      AVLRECL=100 * TUNE with this Average Record Length.

```

Sets the average record length to be used for a tuning run.

It is provided as an override to CBLVCAT's estimated value of the average record length (**AVLRECL=KEEP**, uses the **defined average record length**, therefore, the user does not need to explicitly define an **AVLRECL=nnn** for each file if no change to the average record length is required).

File Modelling

AVLRECL is useful when modelling a new file on the attributes of an existing file. It allows a tuning run to provide recommendations based on the existing file, but tailored to the average record length expected for the new file.

File Fragmentation

CI or CA **splits** occurring at record insertion time may result in CBLVCAT being unable to judge the extent of Freespace distribution. This can lead to a poor estimation of average record length (see **Average Record Length Estimation** in **Tuning Considerations**).

AVLRECL and Maximum Record Length

The specification of **AVLRECL** can also affect CBLVCAT's recommendation of Maximum Record Length (See **LMAX**). If the specified **AVLRECL** is less than the current maximum record length, then the maximum record length value is retained. However, if the specified average record length is greater than the current maximum record length then the maximum record length value is set equal to the specified **AVLRECL** value.

AVLRECL and MAXLRECL

Specifying **AVLRECL** combined with **MAXLRECL** (for basing tuning recommendations on **larger** average and maximum record lengths) can result in CBLVCAT also recommending a larger **CI size**.

Alternate Index Datasets which were defined with default values for MAXIMUM and AVERAGE record size (**32600** and **4086** respectively), can cause CBLVCAT to over allocate capacity in its tuning recommendations (A **WARN 14** message is provided). Supplying more accurate values via the **MAXLRECL** and **AVLRECL** parameters will overcome this problem.

AVRL**(LISTVCAT OPTION)**

```

OPTION CI/CA  AVRL  ASSOC

```

If **LMAX** (maximum record length) is the current installation default, **AVRL** can be used to display the defined average record length. **AVRL** and **LMAX** are mutually exclusive OPTIONS.

In the CBL supplied version of CBLNAME, **LMAX** is the default (**CBLVCSW3** bit **X'10'** is off), however **AVRL** may be made the default by changing this switch.

Note

It is possible for the actual average record length of the loaded data to be different from the defined average record length (See severity message **SEV 2-31**).

AVRL (nn)**(REPORT VCAT))**

```

REPORT VCAT DSN  TYPE NRECS LMAX  AVRL

```

Display the column containing the defined average record length.

The column width is 7, the format is +nnnnn* and the heading is **AVRL** (**AVRL** forms part of the standard Catalog report if the **LMAX** / **AVRL** option is set to **AVRL**).

See Note above.

BLKSIZE (nn)**(REPORT VCAT)**

REPORT VCAT DSN 30 TYPE BLKSIZE

For **VSE** systems only, display the blocksize for **SAM** files which reside in a **VSAM** space.

The column width is 7, the format is +nnnnn* and the heading is **BLKSIZE**

(VSAM SAM BLKSIZE details are also available in a standard report, via the **KL/BLK/IMB** combined column).

BLKSIZE (nn)**(REPORT VTOC)**

REPORT VTOC DSN TYPE SORTD BLKSIZE LRECL

Display the blocksize for **MVS** files.

The column width is 7, the format is +nnnnnn and the heading is **BLKSIZE** (**BLKSIZE** also forms part of the standard report).

VSE SAM does not automatically record a file's geometry (RECFM, LRECL and BLKSIZE) in disk VTOCs. However, it is common for VSE applications that perform I/O to include this information in the DTF control block and so write the file's geometry to its Format 1 record in the VTOC. CBLVCAT reports the blocksize value, if present, otherwise blanks are displayed in the BLKSIZE column.

BUFSP (nn)**(REPORT VCAT)**

REPORT VCAT DSN 30 TYPE SORTD BUFSP

Display the Bufferspace supplied to VSAM when the file was defined.

The column width is 7, the format is +nnnnn* and the heading is **BUFSP** (Bufferspace details are also available as part of the standard report via the **BUFSP/IXL** combined column).

Notes

BUFSP can be **increased** at application run time via JCL overrides (However it cannot be decreased). The optimum buffer space for VSAM to use, depends on whether the file will be processed sequentially or randomly and also on the required number of index levels (see **Bufferspace** in **Additional VSAM Information**).

An asterisk appended to the right of the **BUFSP** value (nnnnn*) indicates that the allocated bufferspace is too small to accommodate 2 **data CIs** plus 1 **index CI**, for each level of index plus 1 (CBLVCAT recommends 1 index buffer more than the levels of index, in case CI/CA **splits** increase the number of index levels).

BUFSP/IXL (nn)**(REPORT VCAT)**

REPORT VCAT 10 DSN 30 BUFSP/IXL CFSIZE EXCPS

A combined field which displays the **Bufferspace** for a data component and the **Number of Index Levels** for an index component.

The column width is 7, the format is +nnnnn* or IXL=nn and the column heading is **BUFSP/IXL** (**BUFSP/IXL** also forms part of the standard report).

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1
o -----
o REPORT VCAT 10 DSN 30 BUFSP/IXL CFSIZE EXCPS
o LISTVCAT DD=CBLV10
o
o
o
o USERCAT CBLV10 (3380) BUFSP CFSIZE EXCPS
o ----- /IXL -----
o TEST.GRP1.USER.CATALOG 3072 512 1645
o ----- IXL=2 1024 116
o DEFAULT.MODEL.ESDS.SAM 9216 4608
o PRODUCT.FS.HIST.NEWMAS 20480 10240
o PRODUCT.FS.CICSXX.MASTER 20480 10240
o PRODUCT.FS.PARAMETER SPANNED 4096 10.3K
o IXL=2 512 2024
o PRODUCT.FS.REPORT.TEST01 20480 10240
o PRODUCT.HIST.001.EXTRACT.CICS 8192 4096 7
o TEST.TEMP.HISTORY.BASE 10240 5120
o
o CBLVCAT IS LICENSED BY COMPUTE (BRIDGEND) LTD 0656-652222, 0656-656466
o ** EXPIRY DATE --- 6 JUN 1995 **

```

Example: LISTVCAT BUFSP/IXL field (CBL Ref: vmxbufx)

Notes

SPANNED shows that the file has been defined with the **SPANNED** attribute, which allows records to span control intervals. If the maximum record length is only slightly greater than the CI size, CBLVCAT tuning will recommend a larger CI size and **NONSPANNED**, as **SPANNED** processing is costly on machine resources.

The two columns are available separately via the **BUFSP** and **IXL** parameters.

See **BUFSP** for a description of the bufferspace warnings.

CAT=xxx.xx

(LISTVCAT)

```
LC CAT=VSESP.USER.CATALOG * Select the Catalog name.
```

For **VSE** systems only, **CAT** may be specified together with the full catalog data set name to select the required Catalog as an alternative to **DDNAME=label**.

Notes

CBLVCAT will dynamically allocate the arbitrary, temporary label, **CBLVL54**, to the specified catalog data set name in order to open and read the catalog. (L54 indicates that the length of the label information is 54 bytes).

This method means that a **DLBL statement** is not required as it one is dynamically allocated to the Catalog name.

CATALOG (nn)

(REPORT VCAT)

```
REPORT VCAT SORTD NRECS DSN 30 CATALOG 30
```

Display the dataset name of the catalog in which the file is defined.

The column width is 44 and the heading is **CATALOG**.

Note

This field can be especially useful when using **MERGE** to produce reports containing information from more than one catalog (see [example 16](#) in [Guide to List Output](#)).

CBLCLINE=nn

(LISTVCAT,LISTVTOC OPTION)

```
OPTION FREE CBLCLINE=60
```

A run time override of the page depth.

The default can be set using the **CBLCLINE** (CBL Common LINEs) field within **CBLNAME**, which is supplied containing the value **X'00'** (58 lines for **MVS** and the SYSLST system default for **VSE**).

Note

Specifying **CBLCLINE=60** is the same as supplying **CBLCLINE=X'3C'**, and is also the same as **PAGEDEPTH=60**, or **PD=60**.

Setting a very high **PAGEDEPTH**, e.g. 32767 (32K-1), causes no page throws and consequently only one set of headings. This can be a useful technique when **post-processing** reports.

CBLVCALE=nn

(LISTVCAT OPTION)

OPTION CBLVCALW=10 CBLVCALE=20

A run time override of the error threshold for secondary extents.

The default can be set using the **CBLVCALE** (CBL VCat ALloc Error) field within **CBLNAME**, which is supplied containing the value **X'0A'** (10).

Note

Reaching or exceeding this threshold will trigger a **SEV 3-nn** severity message, indicating that the file should be tuned as soon as possible. Three asterisks (***) will also be appended to the secondary allocation value (see **ALLOCS**).

The **CBLVCALE** value **MUST** be greater than that of **CBLVCALW** to have any affect.

CBLVCALW=nn

(LISTVCAT OPTION)

OPTION CBLVCALW=10 CBLVCALE=20

A run time override of the warning threshold for secondary extents.

The default can be set using the **CBLVCALW** (CBL VCat ALloc Warning) field within **CBLNAME**, which is supplied containing the value **X'04'** (4).

Note

Reaching or exceeding this threshold will trigger a **SEV 2-nn** severity message, indicating that the file should be tuned when next due for re-loading. An asterisk followed by the number of secondary extents (*nn) will also be appended to the secondary allocation value (see **ALLOCS**).

CBLVCEXT=nn

(LISTVCAT OPTION)

OPTION CBLVCEXT=4 NOASSOC

A run time override for the number of physical extents you wish to display for a file.

The default can be set using the **CBLVCEXT** (CBL VCat EXTents) field in **CBLNAME**, which is supplied containing the value **X'00'** (0).

LISTVCAT DD=CBLV04 CBLVCEXT=4 NOASSOC											
TYPE	NRECS	PCNT	---- ALLOC	TRACKS	----	FRSP	LMAX	KL,RKP	CISIZE	BUFSP	CI/CA
----	-----	----	TOTAL	PRIME	SEC	CI CA	----	/BLK/IMB	-----	/IXL	-----
QUARTER											
KSDS	2557934	62.0	C=4214	C=441	C=16***		5440V	26,0	12288	25600*	49
			VOL1=CBLV31		EXTENT 001		162/00	- 602/14			
					EXTENT 002		603/00	- 618/14			
					EXTENT 003		619/00	- 634/14			
					EXTENT 004		635/00	- 650/14			
			VOL2=CBLV33		EXTENT 019		136/00	- 576/14			
			VOL3=CBLV38		EXTENT 039		003/00	- 443/14			
			VOL4=CBLV39		EXTENT 067		003/00	- 443/14			
			VOL5=CBLV32		EXTENT 095		309/00	- 749/14			
			VOL6=CBLV3E		EXTENT 104		002/00	- 442/14			
					*** 103		SEC EXTENTS ***				
IX	4296	**98.5**	C=10	C=10	C=2		1017	IMB+REP	1024	IXL=4	31
			VOL1=CBLV04		EXTENT 001		856/00	- 865/14			

Example: LISTVCAT with CBLVCEXT (CBL Ref: vmxextc)

Notes

This override can be useful, when used in conjunction with the **LOBLK/ LOCYL/ LOTRK** and **HIBLK/ HICYL/ HITRK** subsets, for tracking down files whose extents lie within a particular disk area.

As can be seen in the above example, once the **CBLVCEXT** limit is reached, the first extent for each subsequent volume is still displayed.

Care must be taken with **large values** for this parameter as a report line is printed for each extent, which can result in a large output print file.

CBLVCFN=xxx

(LISTVCAT OPTION)

```
OPTION      CBLVCFN=DD01
LC          NRECS  2000
```

A run time override for the default VSAM Catalog Name .

The default is used if the **DDNAME** parameter is not supplied on a **LISTVCAT** operation. It can be set using the **CBLVCFN** (CBL VCat File Name) field in **CBLNAME**, which is supplied containing hex zeros (giving a default of **IJSYSUC**).

CBLVCONL=X'xx'

(LISTVCAT OPTION)

```
OPTION    CBLVCONL=X'01'    CBLVCONS=ONLTST    CBLVCONT=512
```

A run time override for the on-line string indicator, which, if present in a file name, denotes an on-line file (Used for tuning).

The default can be set using the **CBLVCONL** (CBL VCat ONLine) field in **CBLNAME**, which is supplied containing **X'00'** (not set). Byte **CBLVCONL** is mapped as follows:

X'80'	select string ONLINE
X'40'	select string CICS
X'20'	select string IMS
X'10'	select string DLI
X'08'	select string DL1
X'06'	reserved (must be off)
X'01'	select string within CBLVCONS

Notes

Not all occurrences of the string enable on-line mode. The filename can be considered to be comprised of one or more "segments" or "qualifiers", each separated by a period ("."). Only strings matching complete segments will activate "online" tuning.

When a file is encountered which contains the relevant string, tuning recommendations are given for that file, based on the setting of the **CBLVCONT** switch.

CBLVCONS=xxxx

(LISTVCAT OPTION)

OPTION CBLVCONL=X'01' CBLVCONS=ONLTST CBLVCONT=512

A run time override, used in conjunction with **CBLVCONL** and **CBLVCONT**, to specify a user-defined character string, which, if present in a file name, denotes an on-line file (Used for tuning).

CBLVCONS can be 1 to 8 bytes in length, must represent a complete segment within the dataset name and is active if **CBLVCONL** bit X'01' is set on (As supplied, the default setting is hex zeros).

CBLVCONT=nnnn

(LISTVCAT OPTION)

OPTION CBLVCONL=X'01' CBLVCONS=ONLTST CBLVCONT=512

A run time override for the maximum CI size for on-line files (Used for tuning).

The default can be set using the **CBLVCONT**, to (CBL VCat ONline Threshold) field in **CBLNAME**, which is supplied containing hex zeros (giving a default of 4096).

CBLVPCPF=nn

(LISTVCAT OPTION)

LC DD=CBLV01 CBLVPCPF=75

A run time override for the file full percentage threshold.

The default can be set using the **CBLVPCPF** (CBL VCat PCnt Files) field in **CBLNAME**, which is supplied containing X'55' (85%).

CBLVCPCT=nn

(LISTVTOC OPTION)

LV VOL=CBLT22 CBLVCPCT=90

A run time override for the tracks full percent threshold (for use in conjunction with the **FREETAB** option).

The default can be set using the **CBLVCPCT** (CBL VCat PCnt Tracks) field in **CBLNAME**, which is supplied containing X'55' (85%).

```

|          1668/00 1671/14 25020 60 EXPD |
| o          1672/00 1769/14 25080 1470 |
| TOTAL FREE TRACKS 1530 OUT OF 26550 (**94% ** USED) |
| *** WARN 003 *** VOLUME GETTING/IS FULL |
| o |
| *** WARN 001 *** 06 = RETURN CODE FROM CBLVCAT |
| o |
| *** ** ** ** ** CBLVCAT 2.12.156 Licensed by Compute (Bridgend) L/ |
| o *** Expiry: 2010-07-20 ** |

```

Example: LISTVTOC VOL PCNTAGE FULL (CBL Ref: vmxpcfc)

Notes

Expired (**EXPD**) files are counted as tracks used unless the option (**NOEXPD**) is set.

LISTVTOC with **FREETAB** reports the Percentage tracks used and also checks this value against **CBLVCPCT**. If this threshold is reached, the percentage value is flagged with asterisks (** nn% **) and a warning message is produced (see above).

CBLVCPCV=nn

(LISTVCAT OPTION)

LC DD=CBLV01 CBLVCPCV=75

A run time override for the volume full percent threshold.

The default is set using the **CBLVCPCV** (CBL VCat PCnt Volumes) field in **CBLNAME**, which is supplied containing **X'55'** (85%).

CBLVRCRM=nn

(DEL,LISTVCAT,LISTVTOC,MOD OPTION)

OPTION CBLVRCRM=16 * Suppress RC=1-15

A run time override for the Minimum return code.

The default is set using the **CBLVRCRM** (CBL VCat Return Code Minimum) field in **CBLNAME**, which is supplied containing **X'00'** (0).

Notes

Any Return Code that is below this minimum is suppressed and replaced with zero. This zero Return Code is passed to the operating system but the original value is reported in the SYSLST/SYSPRINT file.

See "Return Codes" for more information about Return Code values and the different effects for levels of **VSE** operating systems and **CBLVCSW4 X'04'** in "CBLNAME" regarding the interaction with **OEM software** that does not recognise OPERATING SYSTEM Return Codes.

CBLVCSCA=nn

(LISTVCAT OPTION)

LC DD=CBLI11 CBLVCSCI=6 CBLVCSCA=2

A run time override for the threshold value for **CA Splits**.

The default can be set using the **CBLVCSCA** (CBL VCat Splits CA) field in **CBLNAME**, which is supplied containing **X'01'** (1).

Note

For a Standard report, when this value is exceeded, the warning appears under the **TIMESTMP/DEFINED** column. For a customised report use **SPLITS** or **SPLITCA**.

CBLVCSCI=nn

(LISTVCAT OPTION)

LC DD=CBLI11 CBLVCSCI=6 CBLVCSCA=2

A run time override for the threshold value for **CI Splits**.

The default can be set using the **CBLVCSCI** (CBL VCat Splits CI) field in **CBLNAME**, which is supplied containing **X'01'** (1).

Note

For a Standard report, when this value is exceeded, the warning appears under the **TIMESTMP/DEFINED** column. For a customised report use **SPLITS** or **SPLITCI**.

CBLVCSPA=n

(LISTVCAT,LISTVTOC OPTION)

LC DD=CBLI11 CBLVCSPA=1 * Override LINESPACE=2

A run time override for the number of lines between files on a report.

The default can be set using the **CBLVCSPA** (CBL VCat SPACING) field in **CBLNAME**, which is supplied containing **X'00'** (gives a default spacing of 2).

Note

For a Standard report, when this value is exceeded, the warning appears under the Specifying **CBLVCSWA=2** is the same as **CBLVCSWA=X'02'** or **LINESPACE=2**.

CBLVCSW1=X'xx'

(LISTVCAT OPTION)

LC DD=CBLV22 CBLVCSW1=X'85' * ASSOC, PCNT + EXCPS

A run time override for the CBLVCSW1 print options.

The default can be set using the **CBLVCSW1** (CBL VCat SWitch 1) field in **CBLNAME**, which is supplied containing **X'FF'**. Byte **CBLVCSW1** is mapped as follows:

X'80'	on = ASSOC option	off = NOASSOC option
X'40'	on = print --IMB-- eyecatcher (See IMB)	
X'20'	on = print --REP-- eyecatcher (See IMB)	
X'10'	on = VOLINFO option	off = NOVOL option
X'08'	on = (MVS) ALIAS option	off = (MVS) NOALIAS option
X'08'	on = (VSE) SHR option	off = (VSE) S/C option
X'04'	on = PCNT option	off = UNUSED option
X'02'	on = TIMESTMP option	off = DEFINED option
X'01'	on = EXCPS option	off = CI/CA option

The above options are fully documented under their option name.

CBLVCSW2=X'xx'

(LISTVTOC OPTION)

LV VOL=CBLT01 CBLVCSW2=X'20' * No Volers

A run time override for the CBLVCSW2 print options.

The default can be set using the **CBLVCSW2** (CBL VCat SWitch 2) field in **CBLNAME**, which is supplied containing **X'00'**. Byte **CBLVCSW2** is mapped as follows:

X'C0'	Reserved (should be set off)	
X'20'	on = inhibit print of Volume Serial Numbers	
X'10'	on = FREETAB or FREE (see X'08')	off = NOFREE option
X'08'	on = FREETAB option (and X'10' on)	off = FREE (see X'08') option (and X'10' on)
X'04'	on = NOEXPD option	off = EXPD option
X'02'	on = NOPERM option	off = PERM option
X'01'	Reserved (should be set off)	

The above options are fully documented under their option name.

CBLVCSW3=X'xx'

(LISTVCAT OPTION)

LC DD=CBLV22 CBLVCSW3=X'0E' * NOPSEV, NOPCAP and NOPJCL

A run time override for the CBLVCSW3 general options.

The default can be set using the **CBLVCSW3** (CBL VCat SWitch 3) field in **CBLNAME**, which is supplied containing **X'00'**. Byte **CBLVCSW3** is mapped as follows:

X'80'	on = NOMOUNT option	off = MOUNT option
X'40'	on = long filenames overwrite following fields	
X'20'	on = NOINDEX option	off = INDEX option
X'10'	on = AVRL option	off = LMAX option
X'08'	on = NOPSEV option	off = PRTSEV option
X'04'	on = NOPCAP option	off = PRTCAP option
X'02'	on = NOPJCL option	off = PRTJCL option

X'01'	on = DFP 2.2 or higher not available for tuning
--------------	---

The above options are fully documented under their option name.

CBLVCSW4=X'xx'

(LISTVCAT,LISTVTOC OPTION)

LC DD=CBLV22 CBLVCSW4=X'08' * Use BUFND on TUNE JCL

A run time override for the CBLVCSW4 general options.

The default can be set using the **CBLVCSW4** (CBL VCat SWitch 4) field in **CBLNAME**, which is supplied containing **X'00'**. Byte **CBLVCSW4** is mapped as follows:

X'80'	on = CBLVCAT and CBLVTOC take no card input.
X'40'	Reserved (should be set off).
X'20'	VM users accessing MVS non-ICF catalogs require this bit on for the DEFINE option.
X'10'	Reserved (should be set off).
X'08'	on = Use BUFND on TUNE JCL Overrides.
X'04'	on = Force cancel when VSE/SP 2 or higher.
X'03'	on = Suppress console messages on error.

The above options are fully documented under their option name.

CBLVCSW5=X'xx'

(LISTVTOC OPTION)

LV VOL=CBLT01 CBLVCSW5=X'90' * Sort by DATE

A run time override for the CBLVCSW5 **SORT** order.

The default can be set using the **CBLVCSW5** (CBL VCat SWitch 5) field in **CBLNAME**, which is supplied containing **X'00'**. Byte **CBLVCSW5** is mapped as follows:

X'A0'	sort by SIZE (descending)
X'90'	sort by DATE (descending)
X'04'	sort by EXPIRY
X'02'	sort by DSN
X'01'	sort by EXTPRIME
X'00'	sort by EXTENT (default in CBLNAME ASSEMBLE)

CBLVCSW6=X'xx'

(LISTVCAT OPTION)

LC DD=CBLV22 CBLVCSW6=X'08' * Create REORGANISATION Deck

A run time override for the CBLVCSW6 options.

The default can be set using the **CBLVCSW6** (CBL VCat SWitch 6) field in **CBLNAME**, which is supplied containing **X'00'**. Byte **CBLVCSW3** is mapped as follows:

X'80'	on = DEFINE option	off = NODEFINE option
X'40'	on = GDGRPT option	off = NOGDGRPT option
X'20'	on = GDGDSN option	off = NOGDGDSN option

The above options are fully documented under the relevant option name.

X'10'	on = Suppress Catalog name
X'08'	on = Create Reorganisation deck
X'04'	on = Use disk for Reorganisation work file

The above switch settings are all documented under **IDCAMS DEFINE** and **Reorganistaion** in **Guide to LIST Output**.

X'02'	on = Show the actual dataset name of the catalog above the DSN column for Standard and Customised reports.
X'01'	on = Reserved (should be set off).

CBLVCSW7=X'xx'

(LISTVCAT OPTION)

OPTION DEFINE CBLVCSW7=X'04' * No AIX decks

A run time override for the CBLVCSW7 **DEFINE** options.

The default can be set using the **CBLVCSW7** (CBL VCat SWitch 7) field in **CBLNAME**, which is supplied containing **X'00'**. Byte **CBLVCSW7** is mapped as follows:

X'80'	on = PATH parameters suppressed
X'40'	on = BLDINDEX parameter(s) suppressed
X'20'	on = Suppress DEFINE comments
X'10'	on = Include Notes
X'08'	on = CLUSTER parameter(s) suppressed
X'04'	on = AIX parameter(s) suppressed
X'02'	on = DELETE deck(s) not commented out
X'01'	on = Job control suppressed

CBLVCSW8=X'xx'

(LISTVCAT OPTION)

OPTION DEFINE CBLVCSW8=X'10' * Suppress Catalog from the DELETE deck.

A run time override to suppress Catalog details from the **DELETE** parameters (This should be used with care).

The default can be set using the **CBLVCSW8** (CBL VCat SWitch 8) field in **CBLNAME**, which is supplied containing **X'00'** (Catalog details included). Byte **CBLVCSW8** is mapped as follows:

X'10'	on = Catalog details suppressed in DELETE parameters
--------------	---

All other bits are **reserved** and should be set to zero.

See also **IDCAMS DEFINE** and **Reorganistaion** in **Guide to LIST Output**.

CBLVCSW9=X'xx'

(LISTVCAT, LISTVTOC OPTION)

OPTION SHR CBLVCSW9=X'05' * SHR in standard report, 2-digit years & ISC.

A run time override for the CBLVCSW9 general options.

The default can be set using the **CBLVCSW9** (CBL VCat SWitch 9) field in **CBLNAME**, which is supplied containing **X'00'**. Byte **CBLVCSW9** is mapped as follows:

X'10'	on = Suppress oertype of "X" in LISTVCAT TYPE field for SMS Extended and VSE VSAM EXTRALARGEDATASET files.
X'08'	on = Display LISTVCAT devices in hexadecimal representation.
X'04'	on = Use VSAM In-Storage Catalog processing. (Option ISC)
X'02'	on = Display Local Timestamp based on Time Zone displacement.
X'01'	on = Display 2 digit year in VTOC and catalog report date fields. (Otherwise 4 digit year). Also includes S/C or SHR in the standard catalog report.

The above options are fully documented under their option name.

All other bits are **reserved** and should be set to zero.

CBLVCAT REL 2.12 at CBL - Bridgend UK (Internal Only)						2009/08/20 11:55	PAGE	1

option pw 133 linespace=1								
report vcat dsn 33 type gmax vol5 50								
listcat dd=cbli06 key=A								
ICF CAT CBLI06 (3380)	TYPE	GMAX	SEQ	VOLSER	DEVICE	FSEQ	...	

AACR.DATA.CLIENTS	GDG	2	1	DATA10	3380			
			1	DATA10	3380			
AACR.DATA.RK211	GDG	2						
AACR.DATA.RK609	GDG	2	1	CBLI06	3380			
			1	DATA07	3380			
AFAC.DCI.DBKP1	GDG	2	1	000681	TAPE	001		
			1	000680	TAPE	001		
AFAC.GL.DBKP1	GDG	5	1	000758	TAPE	001		
			1	000171	TAPE	001		
			1	001360	TAPE	001		
			1	001022	TAPE	001		
			1	000334	TAPE	001		

CBLVCAT REL 2.10 at CBL - Bridgend UK (Internal Only)						2003/11/18 11:55	PAGE	2

listcat dd=cbli06 key=A cblvcs9=x'08'								
ICF CAT CBLI06 (3380)	TYPE	GMAX	SEQ	VOLSER	DEVICE	FSEQ	...	

AACR.DATA.CLIENTS	GDG	2	1	DATA10	3010200E			
			1	DATA10	3010200E			
AACR.DATA.RK211	GDG	2						
AACR.DATA.RK609	GDG	2	1	CBLI06	3010200E			
			1	DATA07	3010200E			
AFAC.DCI.DBKP1	GDG	2	1	000681	32008003	001		
			1	000680	32008003	001		
AFAC.GL.DBKP1	GDG	5	1	000758	32008003	001		
			1	000171	32008003	001		
			1	001360	32008003	001		
			1	001022	32008003	001		
			1	000334	32008003	001		

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** Expiry: 2010-07-20 **								

Example: CBLVCSW9=X'08' Hexadecimal DEVICE (CBL Ref: vmxsw908)

CI/CA

(LISTVCAT OPTION)

LC OPTIONS CI/CA UNUSED * Choose print columns
SUBSET UNALLOC=100 * Select if 100 trks free

If **EXCPS** is the current installation default, **CI/CA** can be used to display the column containing the number of Control Intervals per Control Area (**CI/CA**) instead of the column containing number of Executed Channel Programs (**EXCPS**). **CI/CA** and **EXCPS** are mutually exclusive options.

In the CBL supplied version of CBLNAME, **EXCPS** is the default (**CBLVCSW1** bit **X'01'** is on). **CI/CA** can be made the default by changing this setting.

See **REPORT VCAT CI/CA** below for an explanation of warning indications.

CI/CA (nn)

(REPORT VCAT)

REPORT VCAT DSN CI/CA EXCPS

Display the number of Control Intervals per Control Area.

The column width is 6, the format is '+nnnn*' and the heading is **CI/CA** (**CI/CA** forms part of the **LISTVCAT** standard report, if option **CI/CA** / **EXCPS** is set to **CI/CA**).

Note

An asterisk appended to the right of the numeric value (nnnn*), indicates that the number of CIs in the CA, reserved to accommodate **CI splits**, is greater than the percentage requested when the file was defined (This generally happens because freespace in a CA has to be an integer number of CIs).

CIMAX=nnnn

(LISTVCAT TUNE)

LC DD=CBLV01 TUNE CIMIN=2048 CIMAX=4096

Limits the maximum data CI size when tuning.

It should be used when the file being tuned is restricted to a specific or maximum CI size (either because it is used on-line, or restricted by another program).

It can also be used for modelling new files intended for on-line use.

Notes

For on-line files you may prefer to use the **CBLVCONx** fields (or run-time OPTIONS) which allow simultaneous tuning of batch and on line files.

CIMAX may be specified together with **CIMIN** to set a range of allowable CI sizes (Specifying **CISIZE=n1,n2** is equivalent and more convenient).

CIMAX and **CIMIN** are mutually exclusive of **CISIZE** (See [Tuning Considerations](#) in [Guide to VSAM Tuning](#) for more information).

CIMIN=nnnn

(LISTVCAT TUNE)

LC DD=CBLV01 TUNE CIMIN=2048 CIMAX=4096

Limits the minimum data CI size when tuning.

It should be used when the file is being tuned exclusively for the batch environment, but can also be used for modelling new files intended for batch use.

Notes

CIMIN may be specified together with **CIMAX** to set a range of allowable CI sizes (Specifying **CISIZE=n1,n2** is equivalent and more convenient).

CIMAX and **CIMIN** are mutually exclusive of **CISIZE** (See [Tuning Considerations](#) in [Guide to VSAM Tuning](#) for more information).

CISIZE (nn) - REPORT VCAT

(REPORT VCAT)

REPORT VCAT DSN TYPE NRECS SORTD CISIZE LMAX AVRL

Display the control interval size.

The column width is 7, the format is '+nnnnn*' and the heading is **CISIZE** (**CISIZE** forms part of the standard report).

Notes

An asterisk appended to the right of the numerical value (nnnnn*) indicates that the CISIZE is insufficient to hold at least two records and the defined CI Freespace.

A plus sign either side of the value (+nnnnn+), indicates that the **index** control interval size is greater than required. (The CBLVCAT calculation is based on the assumption that normal key compression will take place - See [KEY COMPRESSION](#) in [Additional VSAM Information](#)).

The CI size influences (among other things) the proper **BUFSP** recommendation for a tuning run (See [CI SIZE](#) in [Additional VSAM Information](#) and [TUNE block](#) in [Guide to VSAM Tuning](#) for more information on CI size).

CISIZE (nn) - REPORT VTOC

(REPORT VTOC)

REPORT VTOC DSN TYPE SORTD CISIZE START ALLOC

Display the control interval size (FBA disks only).

The column width is 7, the format is '+nnnnn*' and the heading is **CISIZE** (**CISIZE** forms part of the the standard report for FBA disks).

Notes

The CI size also affects the minimum file size, as the file must comprise whole CIs.

The minimum file size is 2 CIs, 1 for data and 1 for Software End Of File (**SEOF**).

CISIZE=KEEP**(LISTVCAT TUNE)**

```
LC DD=CBLV01 TUNE CISIZE=KEEP
SUBSET KEY=FILE.TO.TUNE
```

Keep the **DEFINED** data CI size for this tuning run.

This should be used when other program products restrict the allowable CI size of the file(s) they process.

Notes

This parameter works best when a single file is chosen via the subset **KEY=string** sub-parameter.

CISIZE=KEEP is mutually exclusive of **CIMIN**, **CIMAX** and **CISIZE=n1,n2** (See [Tuning Considerations](#) in [Guide to VSAM Tuning](#) for more information).

It can also be used to stop CBLVCAT recommending that **SPANNED** files become **NON SPANNED** .

CISIZE=n1,n2**(LISTVCAT TUNE)**

```
LC DD=CBLV01 TUNE CISIZE=2048,4096
```

Limits the data CI size tuning recommendations to the range of sizes within '**n1**' and '**n2**' inclusive.

Notes

The '**n2**' value may be omitted, in which case only the '**n1**' value is used for tuning (This is equivalent to specifying the same value for '**n1**' and '**n2**').

CISIZE=n1,n2 is mutually exclusive of **CIMIN**, **CIMAX** and **CISIZE=KEEP** (See [Tuning Considerations](#) in [Guide to VSAM Tuning](#) for more information).

CLASS=n**(LISTVCAT SUBSET)**

```
LC DD=CBLV01 TYPE=K CLASS=3
```

For **VSE** only, used to select files that reference a particular **SPACE CLASS**.

Use option **S/C** for displaying the class of the primary extent.

COMPONENT (nn)**(REPORT VCAT)**

For **LISTVCAT VVDS** only, display the VSAM component name.

The column width is 44 and the heading is **COMPONENT**.

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales				2009/08/19 23:05	PAGE 1

REPORT	VCAT	DSN 30	TYPE	COMPONENT 30	ENTRY 30
LISTVCAT VVDS=CBLI04 KEY=/SVSTCICS.FILEA					
KEY=/TEMP					
KEY=/SVSTCICS.TEST					
KEY=/JPP1					

VVDS	CBLI04	TYPE	COMPONENT	ENTRY	

CICS161.SVSTCICS.DFHTEMP	ESDS	CICS161.SVSTCICS.DFHTEMP.DATA	CICS161.SVSTCICS.DFHTEMP		
CICS161.SVSTCICS.FILEA	KSDS	CICS161.SVSTCICS.FILEA.DATA	CICS161.SVSTCICS.FILEA		
CICS161.SVSTCICS.FILEA	KSDS IX	CICS161.SVSTCICS.FILEA.INDEX	CICS161.SVSTCICS.FILEA		
CICS161.SVSTCICS.TEST	RRDS (R)	CICS161.SVSTCICS.TEST.DATA	CICS161.SVSTCICS.TEST		
CICS161.SVSTCICS.FILEA.AIX	AIX (G)	CICS161.SVSTCICS.FILEA.AIX.D	CICS161.SVSTCICS.FILEA		
CICS161.SVSTCICS.FILEA.AIX	AIX IX	CICS161.SVSTCICS.FILEA.AIX.I	CICS161.SVSTCICS.FILEA		
CBL1.JPP102	LDS	CBL1.JPP102.DATA	CBL1.JPP102		

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Example: LISTVCAT COMPONENT field (CBL Ref: vbv5f1)

Notes

All VSAM clusters have a DATA component but KSDS and AIX clusters also have an index component. The component name can be defined explicitly by the user, or be generated by IDCAMS based on the cluster name.

In **MVS** these component names are also held in the VTOC.

The example above illustrates the difference between the dataset name (heading **VVDS volnnn**), component name (heading **COMPONENT**) and the entry name (heading **ENTRY**).

COMPRESSED

(LISTVCAT SUBSET)

CMP

LC KEY=CBL.CBLI.MBRLIST COMPRESSED

For MVS, selects all data sets that have been defined with SMS DATACLASS attribute COMPACTION.

For VSE, selects all VSAM KSDS clusters that have been defined with IDCAMS DEFINE option COMPRESSED.

CREATED (nn)

(REPORT VTOC)

REPORT VTOC DSN CREATED EXPIRES SORTD ACCESSED

Display the date when the Format 1 label was created.

The column width is 10, the format is 'ccyy/mm/dd' and the heading is **CREATED** (**CREATED** also forms part of the standard report).

Notes

If CBLVCSW9=X'01' is set on (CBLNAME option V2digitYear=Yes) then the format of the CREATED field is 'yy/mm/dd'.

CYL/HD (nn)

(REPORT VTOC)

REPORT VTOC DSN CYL/HD START ALLOC

Display the low and high extent limits (CKD devices only).

The column width is 16, the format is '+cccc/hh+cccc/hh' and the column heading is **CYL/HD LIMITS** (**CYL/HD** also forms part of the standard report for CKD devices only).

CYLMAX=nnn

(LISTVCAT TUNE)

```
LC DD=CBLV01 TUNE CYLMAX=600
```

Limits the maximum size of the PRIME allocation recommended by CBLVCAT.

If this sub-parameter is not supplied, the default is the device capacity (See [Guide to VSAM Tuning](#) for more information).

DDNAME=fname

(LISTVCAT)

DD=fname

```
LC DDNAME=CBLV03
```

Selects the required catalog by referencing the **MVS DD Statement**, the **CMS DLBL**, or the **VSE DLBL**.

Notes

If DDNAME is omitted, **LISTVCAT** will operate on the catalog processed by the previous **LISTVCAT** operation (This includes the last catalog processed by a **REF=ALL** instruction.) If no previous operation, the catalog name held in the field **CBLVCFN** in **CBLNAME** is used (default is **IJSYSUC**).

For **ICF** catalogs the report is based on the BCS, however, reporting on the **VVDS** is also possible (see **VVDS=volser**).

For **MVS systems only** it is possible to use the **REF** parameter to select the catalog.

New users should refer to the [Introduction](#) and [Guide to List Output](#) for examples and more information.

DDNAME=fname

(LISTVTOC)

DD=fname

```
LV DDNAME=CBLT01
```

For **MVS systems only**, used to select the required disk volume by referencing a DD statement.

Notes

Selecting a disk volume is **mandatory** on the first **LISTVTOC** command, but optional on any **LISTVTOC** commands that follow. If it is omitted the VTOC report produced will be of the same volume as the previous **LISTVTOC** command. The omission of this parameter is useful when different report variations are required (such as **SORT** sequence) on the same VTOC.

See also the **DEV** and **VOL** parameters.

New users should refer to the [Introduction](#) and [Guide to List Output](#) for examples and more information.

DEFINE

(LISTVCAT OPTION)

DEF

```
LC DDNAME=ANYCAT KEY=ABC123 DEFINE
  CBLVCSW7=X'01' * Suppress JCL
```

If **NODEFINE** is the current installation default, **DEFINE** can be used to produce an output file of IDCAMS **DELETE/DEFINE** statements for all selected datasets (AIX/ESDS/KSDS/RRDS only). (**DEFINE** and **NODEFINE** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NODEFINE** is the default (**CBLVCSW6 X'80'** bit off). **DEFINE** may be made the default by changing this switch.

Notes

The file will also contain any associated **PATH** and **BLDINDEX** values.

The level of detail included in the IDCAMS **DEFINE** parameters is controlled by the switches **CBLVCSW6**, **CBLVCSW7** and **CBLVCSW8** (see [IDCAMS DEFINE and Reorganisation](#) in [Guide to VSAM Tuning](#)).

DEFINED (nn)

(REPORT VCAT)

REPORT VCAT DSN SORTD DEFINED TIMESTMP

Display the date the file was defined.

The column width is 11 and the heading is **DEFINED** (**DEFINED** also forms part of the standard report if the option **TIMESTMP/DEFINED** is set to **DEFINED**).

Where included as part of the LISTVCAT **standard** report, **DEFINED** has the format **'*ccyy/mm/dd'**. However, if specified on REPORT as part of a **customised** report, then the format is **'ccyy/mm/dd*'** with **'*'** (asterisk) following the date as opposed to preceding it. This is so that SORT on the **DEFINED** field is reliable.

Notes

If CBLVCSW9=X'01' is set on (CBLNAME option V2digitYear=Yes) then the format of the **DEFINED** field is **'*yy/mm/dd'** or **'yy/mm/dd*'** for standard or customised reports respectively. Note that this option will also include report field **SHR** or **S/C** as part of the standard report.

***ccyy/mm/dd**

An asterisk preceding the defined date (or following it in a customised report) indicates today's date.

*****nnn CI SPLITS** and ***nnn CA SPLITS****

These warnings are displayed in the **DEFINED** column for a standard report. They indicate that the appropriate CI and CA splits warning threshold has been reached (**CBLVCSCI** or (**CBLVSCA**).

DEFINED

(LISTVCAT OPTION)

LC DD=CBLV01 DEFINED

If **TIMESTMP** is the current installation default, **DEFINED** can be used to display the file definition date, instead of the date the file was last closed by an operation that may have altered its contents (**TIMESTMP**). **TIMESTMP** and **DEFINED** are mutually exclusive OPTIONS.

In the CBL supplied version of **CBLNAME**, **TIMESTMP** is the default (**CBLVCSW1** bit **X'02'** is on). **DEFINED** may be made default by changing this switch.

Notes

The setting of this option also governs which dates (**TIMESTMP** or **DEFINED**) are to be used for the selection of a **HIDATE**, **LODATE** SUBSET.

DEL

(COMMAND)

D

DEL DEV=161	* Choose device
VOL=PACK11	* Check volume (optional)
DSN='TEMP CBL'	* Quotes required (for blanks)
FAIL=IGN	* Ignore errors

For **VSE** systems only, the **DEL** command allows deletion of a file (**DSN=xxx**) or all the files on a volume (**ALLFILES=YES**).

Note

Select and optionally check a device using one, or any combination of the **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

DEV=ALL

(LISTVTOC)

**VOL=*
ALL**

LV EJ=YES	* A new page for each report
DEV=ALL	* All assigned drives
LV ALL	

VSE systems

A VTOC report is produced for every active disk drive in the system (i.e. Operational (or DVCUP), READY (online) and not assigned IGNORE). To obtain VTOC listings of all **assigned** disk drives use **SYS=ALL**.

MVS systems

A VTOC report is produced for each DASD device on the system belonging to the esoteric group **SYSALLDA**.

The storage and run-time considerations can make this less attractive to the larger user. These are due to the fact that CBLVCAT stores all VTOC information in preparation for further **LISTVTOC** commands referencing the same volumes (subsequent **LISTVTOC** operations, within the same invocation will benefit from significant run-time improvements). Users with large systems should consider **DEV=unitname**.

With MERGE

Use of **DEV=ALL** with **MERGE** in a **REPORT VTOC SORT** allows the user to obtain a single combined report of all VTOCs sorted in any order (See [example 15](#) in [Guide to LIST Output](#)).

Note

If the synonym **ALL** is used to produce the report, it must be the first parameter following the **LISTVTOC** command.

DEV=unitname**(LISTVTOC)**

LV	EJ=YES	* New page for each report
	DEV=3380DASD	* All DASD in generic group

For **MVS** systems only, this will result in a VTOC report for a user defined esoteric group of units (generic subset).

DEV=cuu**(DEL,LISTVTOC,MOD)**

LISTVTOC	DEV=130	* Choose device
	VOL=SYSWK1	* Check volume
MOD	DEV=135	* Choose device
	DSN=ABC.PROD	* Current file name
	NEWDSN=ABC.TEST	* Change name
	EXP=TEMP	* and expiry
DEL	DEV=135	* Choose device
	DSN=ABC.PROD	* Current file name

For **VSE** systems only, the **DEV** and/or **SYS** and/or **VOL** parameters determine the current volume. When a combination of two or more of these parameters is specified, the order of checks for conformance are as follows:

DEV and SYS

The assignment specified by **SYS** must match the cuu specified by **DEV** otherwise **ERROR 28** is incurred.

DEV and VOL

The volser specified by **VOL** must match the volume mounted on the cuu specified by **DEV** otherwise the OPERATOR is prompted to mount the correct volume.

SYS and VOL

The volser specified by **VOL** must match the volume mounted on the DASD assigned to by **SYS** otherwise the OPERATOR is prompted to mount the correct volume.

If a check fails then the operation will fail, with subsequent processing depending on the **FAIL** parameter.

Notes

If **DEV**, **SYS** and **VOL** are omitted, the drive will be that last used or will default to **SYS=0** if no previous device specified.

Within a single invocation of CBLVCAT, a second or subsequent **LISTVTOC** operation on the same volume(s) will benefit from significant run-time improvements, as it uses previously stored information.

See also the **OWN** parameter for checking that the correct volume is mounted.

DEV=nnnn**(LISTVCAT TUNE)**

LC DD=CBLI11 TUNE DEV=3390

Directs CBLVCAT to base its tuning recommendations on the device type specified.

It is designed to be used for modelling new files and for migrating existing files to new disks. Disk devices supported are:

0671 3330 3340 3350 3380 3390 3310 3370 3375 9332 9335 9336 9345

DSN=xxx.xxx.xx.etc**(DEL,MOD)**

```

DEL DEV=161          * Choose device
  VOL=PACK11         * Check volume (optional)
  DSN='FILE ABC'     * Quotes required (for blanks)
  FAIL=IGN           * Ignore errors

MOD DEV=161          * Choose device
  VOL=PACK11         * Check volume (optional)
  DSN='FILE ABC'     * Quotes required (for blanks)
  NEWDSN=FILE.ABC    * No quotes required

```

For **VSE** systems only, selects the file to be deleted or modified.

Notes

If the DataSet Name contains blanks, it must be supplied within single quotation marks.

Select and optionally check a device using one, or any combination of the **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

DSN (nn)**(REPORT VTOC)**

REPORT VTOC DSN 22 CISIZE START ALLOC

Display the VTOC filenames (Dataset names).

The column width is 44, and the column heading is '**VTOC OF vvvvvv**' (where **vvvvv** is the volume serial number of the disk).

Notes

If **DSN** is supplied with a **numeric value** less than 44 and no **SORT** parameter, any names that exceed the column width will be printed in full with data for all subsequent columns printed on the next line of the report (The **SORT** parameter causes the DSN to be **truncated**).

DSN also forms part of the standard report with a column width of 21 (FBA) or 31 (CKD). For this report, the printing of names longer than these values is governed by the **OVLAY/ NOOVLAY** option.

DSN (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE NRECS ALLOC3

Display the VSAM filename.

The column width is 44. For ICF Catalogs the heading is '**ICF CAT vvvvvv (nnnn)**' whereas for non-ICF Catalogs the heading is '**USERCAT vvvvvv (nnnn)**' (where '**vvvvv**' is the volume serial number of the catalog disk and '**nnnn**' is its device type).

```

| ICF CAT CBLI04 (3380)  TYPE      NRECS  PCNT  ---- ALLOC TRACKS ----  FRSP  \
| o -----            -----  ----  ----  TOTAL  PRIME  SEC    CI CA  \
| CICS161.SVSTCICS.FILEA KSDS      45    8.1    1    1    0*      \
| o              IX          1    2.2    1    1    0*      \
|   ASSOC -- AIX=CICS161.SVSTCICS.FILEA.AIX \
| CICS161.SVSTCICS.FILEA.AIX \
| o              AIX( G)      32    1.4    1    1    0*      \
|              IX          1    2.2    1    1    0*      \
|   ASSOC -- PATH=CICS161.SVSTCICS.FILEA.P  \
| /\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/ \

```

Example: LISTVCAT associations (CBL Ref: vmxassoc)

Notes

When the **MERGE** feature is used the heading becomes **DATASET NAME**.

The standard heading (e.g. 'USERCAT CBLV03 (3380)') can be replaced by the actual data set name of the catalog being processed, by setting **CBLVCSW6 X'02'** on.

If **DSN** is supplied with a **numeric value** less than 44 and no **REPORT SORT** parameter, any names that exceed the column width will be printed in full with data for all subsequent columns printed on the next line of the report (The **SORT** parameter causes the DSN to be **truncated**).

ASSOC indicates that the file has ASSOCIATIONS (other than data or index). Printing association details can be enabled/disabled using the **ASSOC/ NOASSOC** option, or by changing **CBLVCSW1** in your **CBLNAME** program.

DSN also forms part of the standard report with a column width of 22. For this report, the printing of names longer than these values is governed by the **OVLAY/ NOOVLAY** option.

EJECT**(COMMAND,DEL,LISTVCAT,LISTVTOC,MOD)**

EJECT=YES EJ

```
LC DD=CBLV01    EJECT=YES
LC DD=CBLV02
EJECT
LV DEV=230
```

EJECT allows the user to control the page skipping.

EJECT is a command if it is the first control word on a statement and a new page is forced immediately, otherwise it is a parameter and a new page is forced immediately after the printing of the operation on which **EJECT** was specified (**EJECT** is not printed).

ENTRY (nn)**(REPORT VCAT)**

```
REPORT VCAT  DSN  TYPE  COMPONENT  ENTRY
```

For **LISTVCAT VVDS=volser** only, used to display the VSAM entry name of the component (For AIXs the associated KSDS dataset name is displayed).

The column width is 44 and the heading is **ENTRY**.

Notes

The **ENTRY** name is generated by IDCAMS when the dataset is defined and, for KSDS, ESDS, RRDS and LDS components, it is the same as the cluster name.

See **COMPONENT** for a comparison between **DSN**, **COMPONENT** and **ENTRY** names.

EXCPS**(LISTVCAT OPTION)**

```
LC DD=CBLV01    OPTION EXCPS
```

If **CI/CA** is the current installation default, **EXCPS** can be used to display the column containing the number of EXecuted Channel Programs (EXCPS) instead of the column containing the number of CIs per CA (CI/CA). **EXCPS** and **CI/CA** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **EXCPS** is the default (**CBLVCSW1** bit **X'01'** is on). **CI/CA** can be made the default by changing this setting.

See Notes in **EXCPS REPORT VCAT** below.

EXP=PERM**(MOD)**

```
MOD SYS=04 VOL=SYSWK2      * Choose device on SYS004 and verify as VOL=volser.
DSN=PROD.ACC.XYZ EXP=PERM  * Change to 1999/366.
```

For **VSE** systems only, change a file expiry date to **1999/366**, thus making it permanent.

Notes

The file data set name must be supplied via the **DSN** parameter.

Select and optionally check a device using one, or any combination of the **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

EXP=TEMP**(MOD)**

```
MOD SYS=04 VOL=SYSWK2      * Choose device on SYS004 and verify as VOL=volser.
DSN=TEST.ACC.XYZ EXP=TEMP  * Change to 1901/001.
```

For **VSE** systems only, change a file expiry date to **1901/001**, thus making it temporary.

Notes

The file data set name must be supplied via the **DSN** parameter.

Select and optionally check a device using one, or any combination of the **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

EXPD**(LISTVTOC OPTION)**

```
LV VOL=CBLT01 OPTION EXPD      * Override NOEXPD in CBLNAME
```

If **NOEXPD** is the current installation default, **EXPD** can be used to display 'EXPD' (instead of the actual expiry date) for files that have expired or have been defined without an expiry date.

EXPD and **NOEXPD** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **EXPD** is the default (**CBLVCSW2** bit **X'04'** is off). **NOEXPD** can be made the default by changing this setting.

```
| ADDRESS MAST SORTED          3584  657640  4000          *EXPD* \
| o B.TSTDATA                 4096  674376  5760          PERMANENT \
| RRR.SORTS                   2560  680136  3200          PERMANENT \
| DISTRIBUTION LIST           8192  683336   512          PERMANENT \
| o TEST3 BLK DATA           8192  683848  1600          *EXPD* \
| PRODN TEST C                 4096  685448  4800          PERMANENT \
| PRODN TEST T                 4096  690248  1600          PERMANENT \
| o PRODN TEST T               691952    16          EXT=2 \
|                               ----- \
| o                             \
| FREE SPACE ON CBLT01         47138  15650 \
|                               213760 118064 \
| o                               557568   432 \
|                               563500  71258 \
|                               634758 12725 EXPD \
| o                               647483    5 \
|                               647488   688 EXPD \
|                               648176  9208 \
| o                               657384   255 EXPD \
|                               657639    1 \
|                               657640  4000 EXPD \
| o                               683848  1600 EXPD \
|                               691848   104 \
|                               691968  20544 \
| o TOTAL FREE BLOCKS                254534 OUT OF 712512 ( 64% U/ \
|                               * * * * * CBLVCAT 2.12.156 Licensed by Compute (Bridgend) \
| o                               ** Expiry: 2010-07-20 ** \
```

Example: LISTVTOC with EXPD OPTION (CBL Ref: vmxexp1)

ADDRESS MAST SORTED	3584	657640	4000	86/03/28	/
o B.TSTDATA	4096	674376	5760	PERMANENT	/
RRR.SORTS	2560	680136	3200	PERMANENT	/
DISTRIBUTION LIST	8192	683336	512	PERMANENT	/
o TEST3 BLK DATA	8192	683848	1600	94/04/19	/
PRODN TEST C	4096	685448	4800	PERMANENT	/
PRODN TEST T	4096	690248	1600	PERMANENT	/
o PRODN TEST T		691952	16	EXT=2	/

o					/
FREE SPACE ON CBLT01		47138	15650		/
		213760	118064		/
o		557568	432		/
		563500	71258		/
		647483	5		/
o		648176	9208		/
		657639	1		/
		691848	104		/
o		691968	20544		/
TOTAL FREE BLOCKS			235266	OUT OF 712512 (67%	U
o	** ** ** ** **				
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	** Expiry: 2010-07-20 **				

Example: LISTVTOC with NOEXPD OPTION (CBL Ref: vmxexp2)

Notes

If **EXPD** is in force and the **FREETAB** option is used, the space occupied by expired files is included in the Freespace table with **EXPD** appended to it.

If **NOEXPD** is in force, the space occupied by expired files is not included in this table.

EXPIRES (nn) - REPORT VTOC

(REPORT VTOC)

REPORT VTOC 10 DSN 30 CREATED 14 EXPIRES

Display the expiry date of the file. i.e. the date when extents in the VTOC belonging to a file may be overwritten without a warning message.

The column width is 10 and the column heading is **EXPIRES** (**EXPIRES** also forms part of the standard report).

Where included as part of the LISTVTOC **standard** report, EXPIRES has the format ***ccyy/mm/dd**. However, if specified on REPORT as part of a **customised** report, then the format is **'ccyy/mm/dd'** with **'**'** (asterisk) following the date as opposed to preceding it. This is so that SORT on the EXPIRES field is reliable.

Notes

If CBLVCSW9=X'01' is set on (CBLNAME option V2digitYear=Yes) then the format of the EXPIRES field is ***yy/mm/dd** or **'yy/mm/dd'** for standard or customised reports respectively.

*ccyy/mm/dd

An asterisk preceding the expiry date (or following it in a customised report) indicates that an expiry date of **1999/12/31** which has been calculated from a retention period and is therefore **not** considered **permanent**.

Although this may be intentional, it is highlighted so that it may be checked by the user to avoid files being silently deleted on or after 31st December 1999.

The contents of this column are affected by the **EXPD/ NOEXPD** and **PERM/ NOPERM** and options.

Possible entries in this column are:

1. The actual **expiry** date.
Displayed for expired and/or permanent files, if the **NOEXPD** and/or **NOPERM** options are active.
2. **EXPD**
No expiry date has been defined for the file, the file is temporary (expiry date of 01/001 = 1901/01/01) or the expiry date is on or before the report heading date. (The **EXPD/NOEXPD** option has to be set to **EXPD**).
3. **TODAY**
The file expired on the day when the report was produced (The **EXPD/NOEXPD** option has to be set to **EXPD**).
4. **PERMANENT**
The file is permanent i.e. created with an explicit expiry date of 1999/365 or 1999/366. An expiry date of 1999/12/31 which has been calculated from a retention period value is **not** considered permanent by the operating system. (The **PERM/NOPERM** option has to be set to **PERM**).

EXPIRES (nn) - REPORT VCAT**(REPORT VCAT)**

REPORT VCAT DSN 30 TYPE DEFINED EXPIRES

Display the expiry date of the file as defined by the IDCAMS DEFINE TO(...) parameter.

CBLVCAT REL 2.12 AT CBL - Bridgend UK (Internal Only)			2009/08/20 16:30	PAGE	1

** CBL.VVC.CTL(EXPIRES) *** L=001 +++ 2001/05/04 16:38:02 (NBJ)					
option pw=133 * Override CBLNAME default pagewidth.					
report vcat dsn type EXPIRES					
listvcat ref=usercat.cblcat * User catalog.					
type=m novol noassoc noindex * VSAM + No volume/assoc/index info.					
ign=/CTRDB key=CBL * All DSN "CBL.." without "..CTRDB.."					
ICF CAT CBLCAT (3390) TYPE EXPIRES					

CBL.BU.CTL KSDS					
CBL.EMPTY.IMB.KSDS KSDS					
CBL.EMPTY.KSDS KSDS					
CBL.EMPTY.KSDS1 KSDS					
CBL.ESDS ESDS					
CBL.ESDS.SELCOPY.NAM ESDS (R) 2001/04/30					
CBL.IMBED.KSDS KSDS					
CBL.IMS.CBLAMDB1.CBLAMDD1 ESDS					
CBL.IMS.CBLAMP11.CBLAMPD1 KSDS					
CBL.KSDS KSDS					
CBL.KSDS.SQ10721.EMPTY KSDS (R) 2001/03/09					
CBL.KSDS.U KSDS					
CBL.NFS.HANDLE.S01 KSDS (R)					
CBL.NFS.HANDLE.S02 KSDS (R)					
CBL.OPCODES KSDS					
CBL.OPNEMAIX AIX (QG)					
CBL.RRDS.NOREUSE RRDS					
CBL.RRDS.REUSE RRDS (R)					
CBL.RRDSV VRDS					
CBL.SELCOPY.NAM.ESDS ESDS (R)					
CBL.SQ10299.ESDS.EMPTY ESDS					
CBL.SQ10299.KSDS.EMPTY KSDS					
CBL.SQ10612.MMEXTCUS KSDS					
CBL.SQ10612.MMMASCDE KSDS					
CBL.SQ10612.MMMASSCH KSDS					
CBL.SQ9883.ESDS ESDS (R)					
CBL.VRDS01 VRDS					
CBL.VRDS02 VRDS					
CBL.VVC.TMP KSDS 2022/01/11					

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** Expiry: 2010-07-20 **					

Example: Catalog Report with REPORT field EXPIRES (CBL Ref: vxexpire)

The column width is 10, the format is 'ccyy/mm/dd' and the column heading is **EXPIRES**.**Notes**

Valid expiry dates such as yyyy/366, or yyyy/999 which cannot be converted from Julian to International format, will be printed unchanged.

EXT (nn)**(REPORT VCAT)**

REPORT VCAT DSN SMS EXT

Display characteristics of MVS data sets with SMS extended attributes and VSE VSAM files defined with IDCAMS DEFINE parameter EXTRALARGEDATASET.

The column width is 11, the format is 'xxx(x)(nn)' and the column heading is **EXT-ATTRIB**.

Possible entries in this column are as follows:

Position	Entry	Description
1	X	Data set is defined as being Extended.
2	A	Data set is defined as being of Extended Addressability or, for VSE, defined with EXTRALARGEDATASET. (Extended flag is also displayed).
3	C(x)	Data set is defined as being Compressed. For MVS, the value in parentheses indicates the type of compression. Possible values are: <ul style="list-style-type: none"> • C(G) Generic DBB (Dictionary Building Block) compression.

		<div><div><div>• C(T) Tailored compression.</div><div>• C(R) Compression Rejected.</div></div><div>For VSE, the value in parentheses indicates the compression status. Possible values are:</div><div><div>• C(P) Compression Pending.</div><div>• C(A) Compression Active.</div><div>• C(R) Compression Rejected.</div><div>• C(U) Compression Undetermined.</div></div></div>
7	S(nn)	Data set is defined as being Striped and has nn stripes (where nn>01).

EXT-ADDR

(LISTVCAT SUBSET)

EXTA
EXTENDED (VSE Only)
EXT (VSE Only)
XVSAM (VSE Only)

LC KEY=CB L.CBLI.MBRLIST EXT-ADDR TYPE=C

For MVS, selects all data sets that have been defined with SMS DATACLASS attribute Extended Addressability.

For VSE, selects all VSAM KSDS clusters that have been defined with IDCAMS DEFINE option EXTRALARGEDATASET.

EXTENDED

(LISTVCAT SUBSET)

EXT

LC DD=VSESPUC EXTENDED

For MVS, selects all data sets (VSAM and non-VSAM) that have been defined with SMS DATACLASS attribute DSNTYPE=EXT.

For VSE, EXTENDED is a synonym for **EXT-ADDR**.

EXTNO=nn

(LISTVTOC SUBSET)

EXTNUM=nn

LV VOL=CB LT01 SUBSET EXTNO=6

Selects files with at least **nn** extents.

FAIL=xxx

(LISTVCAT,LISTVTOC,DEL,MOD)

DEL DEV=161 ALLFILES=YES VOL=SYSWK1 FAIL=IGNORE * VSE only.

MOD DEV=104 DSN=ABC.TEST NEWDSN=DEF.TMP FAIL=EOJ * VSE only.

LV VOL=CB LT03 LOEXP=93/10/27 FAIL=CANCEL

Used to select the action following an operation failure.

CANCEL
End processing immediately with an appropriate message and a non-zero return code (default).

IGNORE
IGN
Ignore the error and continue with the next operation.

EOJ
End processing immediately with an appropriate message and return code.

FREE

(LISTVTOC OPTION)

IV VOL=CBLT03 FREE

If **FREETAB** (or **NOFREE**) is the current installation default, **FREE** can be used to display Freespace extents as they occur, within the main body of the report (**FREE**, **FREETAB** and **NOFREE** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOFREE** is the default (**CBLVCSW2** bit **X'10'** is off). **FREE** can be made the default by changing this setting (**CBLVCSW2** bit **X'10'** on and bit **X'08'** off).

LISTVTOC	VOL=CBLT03	FREE							
VTOC OF CBLT03		CISIZE	START	ALLOC	USED	TYPE	EXPIRES	BL	
VTOC			557256	286	13	FBA			
FREE			2	154786					
TEST.SCRN.LIBRARY.4		512	154788	1500			PERMANENT		
TEST.SOURCE.LIBRARY.4		512	156288	36000			PERMANENT		
FREE			192288	139536					
Z9999994.VSAMDSPC.T9A1BDD6.T8976140									
		512	331824	744		VSAM	PERMANENT		
Z9999992.VSAMDSPC.T9A1BDD9.T8014540									
		512	332568	224688		VSAM	PERMANENT		
FREE			557542	104098					
MASTER SORT TABLE		4608	661640	160			PERMANENT		

Example: LISTVTOC FREE option (CBL Ref: vmxfree)

Note

SORT=EXP/DATE/DSN used in conjunction with **FREE** will **not** report on freespace, as freespace does not have a valid DSN or any create/expiry date information.

FREEBYTES (nn)

(REPORT VCAT)

REPORT VCAT DSN 30 HIUSERBA HTALIRBA FREEBYTES

Display the Freespace Bytes value (as required for investigative purposes).

The column width is 11, the format '**+nnnnnnnnnnn**' and the heading is **FSPC BYTES**.

Notes:

The FREEBYTES value is calculated based on FREESPACE, HIUSERBA and HIALLRBA values.

The FREEBYTES value is used by CBLVCAT in calculating its tuning recommendations for Catalog reports with **TUNE**.

FREETAB

(LISTVTOC OPTION)

LV	VOL=CBLT03	FREETAB	EXPD	* Freespace, includes expired files
LV	VOL=CBLT03	FREETAB	NOEXPD	* Freespace, excludes expired files

If **FREE** (or **NOFREE**) is the current installation default, **FREETAB** can be used to display Freespace information separately at the end of the report (**FREETAB**, **FREE** and **NOFREE** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOFREE** is the default (**CBLVCSW2** bit **X'10'** is off). **FREETAB** can be made the default by changing this setting (**CBLVCSW2** bit **X'10'** on and bit **X'08'** on).

VTOC OF CBLT91	START	ALLOC	USED	TYPE	EXPIRES	BLKSIZE	LRE
VTOC	557256	286	29	FBA		96	
DBASE.WORK.DATA	634758	12725			*EXPD*		
B.TSTDATA	674376	5760			PERMANENT		
TEST.SCRN.LIBRARY.5	23002	5130			PERMANENT		
PRODN TEST C	685448	4800			PERMANENT		
V.TSTDATA	669704	4672			PERMANENT		
ACCOUNTS-DATA	664104	4000			PERMANENT		
ADDRESS MAST SORTED	657640	4000			*EXPD*		
MEANS.CATALOG	558000	4000			PERMANENT		
RRR.SORTS	680136	3200			PERMANENT		
WORK MASTER	661800	2304			PERMANENT		
PRODN TEST T	690248	1600			PERMANENT		
	213288	472					
	691952	16					
	557542	26					
DOC ASM	668104	1600			PERMANENT		
TEST3 BLK DATA	683848	1600			*EXPD*		
MEANS.AUDIT.FILE	562000	1500			PERMANENT		
TEST.SCRN.LIBRARY.4	154788	1500			PERMANENT		
Z9999994.VSAMDSPC.T9A							
	331824	744		VSAM	PERMANENT		
EDIT.WORK.DATA	647488	688			*EXPD*		
DISTRIBUTION LIST	683336	512			PERMANENT		
TEST2.WORK.DATA	657384	255			*EXPD*		
MASTER SORT TABLE	661640	160			PERMANENT		

FREE SPACE ON CBLT91	213760	118064					
	563500	71258					
	691968	20544					
	47138	15650					
	634758	12725	EXPD				
	648176	9208					
	657640	4000	EXPD				
	683848	1600	EXPD				
	647488	688	EXPD				
	557568	432					
	657384	255	EXPD				
	691848	104					
	647483	5					
	657639	1					
TOTAL FREE BLOCKS		254534	OUT OF 712512 (64%	USED)			
** ** *	56	Licensed by Compute (Bridgend) Ltd +44 (1656/					
		** Expiry: 2010-07-20 **					

Example: LISTVTOC FREETAB OPTION (CBL Ref: vmxfret)

Notes

The Freespace table will be printed in ascending extent order unless **SORT=SIZE** is in effect, in which case the display will be in descending order.

As well as the total number of tracks/blocks used, the percentage this constitutes is also displayed. When this percentage is flagged with asterisks, the user defined tracks full percentage threshold (see **CBLVCPCT** in **CBLVCPCT**) has been reached. This is accompanied by a **WARN 003** message (**Return Code 06** also produced).

The Freespace table is also affected by the **EXPD/ NOEXPD** option. If **EXPD** is in force, expired files are displayed as a part of the table with **EXPD** appended to the right of the value whereas if **NOEXPD** is in force they are not included.

See also [example 18 - 'Free space in all VTOCs' in Guide to List Output](#).

FRSP (nn)

(REPORT VCAT)

REPORT VCAT DSN 22 TYPE NRECS PCNT ALLOC3 FRSP

Display the KSDS/AIX distributed **Freespace** percentage fields (bytes/CI and CIs/CA).

The column width is 7, the format is **'+nn+nn'** and the heading is **FRSP CI CA** (**FRSP** also forms part of the standard report).

Freespace is reserved during an initial file load and also during sequential insertion if CI or CA splits occur (see **CI splits**, **CA splits** and **Freespace** in **Additional VSAM Information**).

o USERCAT CBLV11 (3380)	TYPE	NRECS	PCNT	---- ALLOC TRACKS ----			FRSP	
				TOTAL	PRIME	SEC	CI	CA
o ABC.DL.BJD	KSDS	331	22.4	4	4	1	5	0
	IX	1	3.3	1	1	1		
ABC.DL.BPM	KSDS	334	17.6	4	4	1	5	0
	IX	1	3.3	1	1	1		
o ABC.PP.BRENT.FEE.TABLE	KSDS	42	7.8	1	1	1	25	25
	IX	1	2.2	1	1	1		
o ABC.PP.BRENT.MMS	KSDS (R)	0 (2430)		C=9	C=9	C=3		
	IX			2	2	1		
ABC.PP.BRENT.PMF	KSDS	7158	69.8	C=19	C=13	C=2	25*25	
	IX	19	52.8	2	2	1		
o ABC.PP.PP003A.WORK	KSDS	13623	75.1	1008	1008	64	20*	5
	IX	102	81.0	7	7	1		

Example: LISTVCAT FRSP field (CBL Ref: vmxfrrsp)

Notes

The value displayed is the amount specified at define time, not necessarily the actual amount reserved.

Both entries left **blank** indicates that both FRSP CI and FRSP CA are zero. This means that no space has been reserved for adding records to a KSDS file and inserts will cause immediate CI and CA splits (very costly). When the file in question is static (i.e. no insertions take place) it is correct to specify no Freespace.

An asterisk to the right of the FRSP CI value (**nn***) indicates the space reserved is unusable as it is insufficient to support the insertion of at least one record

An asterisk to the right of the FRSP CA value (**nn***) indicates that either VSAM has reserved twice the requested Freespace, or the amount reserved is 20% higher than that DEFINED.

FRSPCA=nn

(LISTVCAT TUNE)

```
LC DD=TESTCAT KEY=CURRENT.FILE.2
TUNE FRSPCI=20 FRSPCA=5
```

Sets the percentage of CIs per CA to be left free during initial load (KSDS and AIX files).

This is supplied as an override to the current Catalog statistics and the tuning recommendations will reflect this override.

Notes

Ordinarily the **GROWTH** parameter should be used (see [Growth and Freespace in Tuning Considerations](#)).

FRSPCA may be used with **FRSPCI**, but neither may be used with **GROWTH**.

FRSPCA=0 and **FRSPCI=0** (or **GROWTH=0**) should be specified for **static KSDS files**.

FRSPCI=nn

(LISTVCAT TUNE)

```
LC DD=TESTCAT KEY=CURRENT.FILE.2
TUNE FRSPCI=20 FRSPCA=5
```

Sets the percentage of CI space to be left free during initial load (KSDS and AIX files).

This is supplied as an override to the current Catalog statistics and the tuning recommendations will reflect this override.

See **FRSPCA** for notes on its use.

GDGDSN

(LISTVCAT OPTION)

```
LC DD=CBLI01
TYPE=G GDGDSN
```

For use in conjunction with **REPORT VCAT**. If **NOGDGDSN** is the current installation default, **GDGDSN** can be used to append the GDG Dataset Name with the absolute generation number.

In the CBL supplied version of **CBLNAME**, **NOGDGDSN** is the default (**CBLVCSW6** bit **X'20'** set off). **GDGDSN** can be made the default by changing this setting.

```

REPORT VCAT   DSN 30   VOL1 80
o
LISTVCAT      DDNAME=CBLI01
              TYPE=G   GDGDSN      * GDGDSN Option
o
ICF CAT CBLI01 (3350)          VOLSER ...
o -----
TEST.COP.ADF
o TEST.COP.AIF
TEST.COP.CIF
Z.EXAMPLE.GDG.G0529V17      000017 000118 000126 000144 000152 000159 000036 \
o                                000040 000044 000339 000066 000103 000452 000104 /
                                000233 000343 000500 000505 000471 000472 000444 \
                                000446 000608 000511 000513 000515 000516 000451 /
o Z.EXAMPLE.GDG.G0530V18      000018 000354 000356 000107 000175 000392 000203 \
                                /
* * * * * CBLVCAT 2.12.156   Licensed by Compute (Bridgend) Ltd +44 ( \
o                                ** Expiry: 2010-07-20 **

```

Example: REPORT VCAT GDGDSN (CBL Ref: vmxgdsn)

Notes

In this example the overflow information relating to each Catalog entry (i.e. the items which will not fit on a single line) is printed without the DSN (the DSN is only included once). See **GDGRPT** for information on printing the DSN on each line.

The **GDGDSN** is made up of the generation number (**GGEN** - in this example '0529' and '0530') and the version number (**GVER** - in this example '17' and '18'). The version number can run from 00 to (maximum GDG level)-1. (maximum GDG level is supplied at file definition time).

The specification of VCAT report parameter **VOL1** with a numerical argument, causes as many **VOL1** data items (serial numbers) to appear on a line as possible within the given field width (if no argument is supplied, the default is one data item per line).

GGEN, **GVER** and **GMAX** are all available as separate report fields.

GDGRPT (GDG repeat)

```

LC DD=CBLI01
TYPE=G   GDGRPT

```

For use in conjunction with **REPORT VCAT**. If **NOGDGRPT** is the current installation default, **GDGRPT** can be used to repeat the unchanged GDG information on every line that contains overflow information for that file.

In the CBL supplied version of **CBLNAME**, **NOGDGRPT** is the default (**CBLVCSW6** bit **X'40'** set off). **GDGRPT** can be made the default by changing this setting.

Note

This can be particularly useful for the post-processing of reports.

GGEN (nn) (GDG gen nos)

```

REPORT VCAT   DSN 22   TYPE   GMAX   GGEN   GVER VOL3 25

```

Display the generation numbers of GDG files (see **GDGDSN** Notes).

The column width is 4, the format is 'nnnn' and the column heading is **GEN**.

GMAX (nn) (GDG max level)

```

REPORT VCAT   DSN 22   TYPE   GMAX   GGEN   GVER VOL3 25

```

Display the maximum level of GDG files (see **GDGDSN** Notes).

The column width is 3, the format is 'nnn' and the column heading is **MAX**.

GROWTH=nn**(LISTVCAT TUNE)**

LC DD=CBLI96 KEY=/TEMP TUNE RECORDS=5000 GROWTH=50

Sets the percentage growth expected before the file(s) are next re-organised.

The value can be from 0 to 99 percent.

This is supplied as an override to the current Catalog statistics and the tuning recommendations will reflect this override.

Notes

If **GROWTH** is used, **FRSPCA** and/or **FRSPCI** cannot be used.

GROWTH=0 (or **FRSPCA=0** and **FRSPCI=0**) should be specified for **static KSDS files** which experience no inserts.

For KSDS and AIX files, **GROWTH** affects the distributed free space only, thus assuming that the initial load will be for the number of records that currently exist (Use the **RECORDS=nnn** parameter in order to increase/decrease the initial file size).

For ESDS and RRDS files, **GROWTH** increases the size of the primary allocation, in order to prevent secondary allocations when records are added to the file.

See [Growth and Freespace in Tuning Considerations](#).

GVER (nn) (GDG vers no)

REPORT VCAT DSN 22 TYPE GMAX GGEN GVER VOL3 25

Display the version number of GDG files (see **GDGDSN** Notes).

The column width is 2, the format is 'nn' and the column heading is **VER**.

HEAD='string'**(LISTVCAT,LISTVTOC OPTION)**

```
OPTION    HEAD='the heading required'
LC DD=CBLI04    HEAD='the heading required'
LV VOL=CBL001    HEAD=NO                * No heading required
```

CBLVCAT's single line page heading may be replaced by a heading of your own choice (or suppressed altogether) using this parameter.

Notes

A **null string** as the argument to **HEAD** is **not** permitted.

If **HEAD=NO** is coded then the standard heading is suppressed (the time, date and page number (right adjusted) will still remain).

If the **HEAD** parameter is coded for the first report, then the CBLVCAT heading is overwritten **before** printing any control cards.

Multiple **HEAD** parameters are allowed. The argument of the **last HEAD** parameter encountered will be used for all headings from that point onwards.

Second and subsequent **HEAD** parameters will automatically force a new page for the new report, therefore, use of an **EJECT** parameter to force a new page is **unnecessary**.

The heading supplied (maximum length of 59 bytes) is left adjusted and underlined. The partition/operating system identifier and Job name/User Id are **removed**. The time, date and page number are right adjusted according to the heading width, however, they will be shortened or removed altogether for large **HEAD** strings with small heading widths.

HIALLRBA (nn)**(REPORT VCAT)**

REPORT VCAT DSN 30 HIUSERBA HIALLRBA FREEBYTES

Display the High Allocated Relative Byte Address (for investigative purposes).

The column width is 11, the format '+nnnnnnnnnnn' and the heading is **HI ALL RBA**.

HICISZ=nnnn

(LISTVCAT SUBSET)

LC DD=CBLI11 LOCISZ=2048 HICISZ=4096

Select files with a **CI size** less than or equal to the value specified.

HICISZ may be used with **LOCISZ** to restrict to a specified range of CI sizes.

HICYL=nnnn

(LISTVCAT,LISTVTOC SUBSET)

LV DD=DD1 LOTRK=30 HICYL=10

For **CKD Disks only** (see **HIBLK** for FBA). **HICYL** is used to select files whose extent(s) reside fully or partially below this cylinder limit.

See Notes in **HIBLK** for further information.

HIDATE=date

(LISTVCAT,LISTVTOC SUBSET)

```
LC DD=CBLI11 LODATE=2005/02/22 HIDATE=20090507
LV DEV=ALL LODATE=20070918 HIDATE=2008/09/17
LC KEY=CBL.X232.REP LODATE=-30 HIDATE=-1
```

Select files with a date less than or equal to the value specified.

Notes

Specifying **LODATE** and **HIDATE** together sets a range of dates.

Specifying the same date for **LODATE** and **HIDATE** limits the report to a single date.

The **date** may be: **' +/-ddd'**, **'ccyyymmdd'**, **'yymmdd'**, **'ccyy/mm/dd'**, **'yy/mm/dd'** or a shorter form (Examples are: **' +7'**, **' -30'**, **'20020703'**, **'930506'**, **'93/05/06'**, or **'9305'**, **'93/05'**, or **'93'**).

The century for the **'yymmdd'** and **'yy/mm/dd'** formats of the argument is interpreted using a sliding window in the range -79 to +20 relative to Current Date.

See **Year 2000 Compliance** for examples of 'Sliding Windows'.

The formats **'dd/mm/yy'** and **'mm/dd/yy'** are not supported and will result in an **ERROR 16**.

The format **' +/-ddd'** allows the date to be expressed as the number of days relative to the current date.

For **LISTVCAT**, if **TIMESTMP** is the current option, the **HIDATE** subset selects using the **TIMESTMP** date. If **DEFINED** is the current option the **DEFINED** date is used.

For **LISTVTOC** the **HIDATE** and **LODATE** subset filters entries using the **CREATED** column date.

For VTOC reports, selection by expiry date is available via the **LOEXP/ HIEXP** subset.

HIEXP=date

(LISTVTOC SUBSET)

LV DD=CBLT03 LOEXP=0 HIEXP=+7 * Expire this week

Select files that expire on or before this date.

Notes

Specify a date range by using **LOEXP** and **HIEXP** together.

Specifying the same date for **LOEXP** and **HIEXP** limits the report to a single expiry date.

The **date** may be: **' +/-ddd'**, **'ccyyymmdd'**, **'yymmdd'**, **'ccyy/mm/dd'**, **'yy/mm/dd'** or a shorter form (Examples are: **' +7'**, **' -30'**, **'20020703'**, **'930506'**, **'93/05/06'**, or **'9305'**, **'93/05'**, or **'93'**).

The century for the **'yymmdd'** and **'yy/mm/dd'** formats of the argument is interpreted using a sliding window in the range 0 to +99 relative to Current Date.

See **Year 2000 Compliance** for examples of 'Sliding Windows'.

The formats '**dd/mm/yy**' and '**mm/dd/yy**' are not supported and will result in an **ERROR 16**.

The format '**+/-ddd**' allows the date to be expressed as the number of days relative to the current date.

The **HIEXP** and **LOEXP** subset filters entries using the **EXPIRES** column date.

The **EXPD/ NOEXPD** option setting does not affect the selection.

Selection by create date is available via the **LODATE/ HIDATE** subset.

HITRK=nnnn

(LISTVCAT,LISTVTOC SUBSET)

LV DD=DD1 LOCYL=10 HITRK=30

For **CKD Disks only** (see **HIBLK** for FBA). **HITRK** is used to select files whose extent(s) reside fully or partially below this track limit.

HITRK may be used with **LOCYL** or **LOTRK**, but not with **HICYL**.

See Notes in **HIBLK** for further information.

HIUSERBA (nn)

(REPORT VCAT)

REPORT VCAT DSN 30 HIUSERBA HIALLRBA FREEBYTES

Display the High Used Relative Byte Address (for investigative purposes).

The column width is 11, the format '**+nnnnnnnnnn**' and the heading is **HI USE RBA**.

Notes:

For MVS data sets defined with SMS DATACLASS attribute "Extended Addressability" or VSE VSAM files defined with IDCAMS attribute EXTRALARGEDATASET, the HIUSERBA value is stored as a **relative CI** address instead of a **relative byte** address.

CBLVCAT converts a relative CI address to a relative byte address by multiplying the value by the CISIZE and displays the product in the HIUSERBA column.

The HIUSERBA value is used by CBLVCAT in calculating its tuning recommendations for Catalog reports with **TUNE**.

IGN=string

(LISTVCAT,LISTVTOC SUBSET)

IGN=/string

LC DD=CBLI01 IGN=TEMP * Ignore if name starts TEMP.
LV SYS=10 SUBSET IGN='/A B' * Ignore if "A B" anywhere in name.

Exclude files from the report based on a reference to the string supplied.

If the string does not start with a slash (i.e. **IGN=xxx**), the file will be bypassed if the dataset name starts with the string characters.

If the string starts with a slash (i.e. **IGN=/xxx**), the file will be bypassed if it contains the string characters following the slash **anywhere** in its name.

Notes

If the string contains blank(s) it must be enclosed in quotes (including the slash).

Multiple **KEY** and/or **IGN** parameters are allowed and are processed as a logical **OR** meaning that if **KEY** and **IGN** are both specified, the order of appearance is important.

1. IGN=ONLY KEY=ONL

Any file starting with "ONLY" would be ignored as it satisfies the first condition. A file starting with "ONLI" would fail the first condition but be selected by **KEY=ONL**.

2. KEY=ONL IGN=ONLY

Any file starting with "ONLY" would be selected by **KEY=ONL** and included in the report, as would a file starting with "ONLI". The second parameter has no effect as all files starting with "ONLY" have been selected by the first condition.

IMB**(REPORT VCAT)**

REPORT VCAT DSN TYPE SORTD IMB CI/CA CISIZE

Display the special index attributes.

The column width is 7, the format is '--IMB--', '--REP--' or 'IMB+REP' and the column heading is 'IMB/REP'

IMB is also available within the **KL,RKP/BLK/IMB** combined column in the standard report or within the Combined report field of the same name.

Notes

'--IMB--' indicates the file was defined with the **IMBED** attribute. This means that the lowest level of the index (the sequence set) is placed in the first track of each control area it references. The sequence set is automatically replicated on this track.

'--REP--' indicates that the file was defined with the **REPLICATE** attribute. This means that the index CIs are repeated as many times as will fit on a track.

'IMB+REP' indicates that the file was defined with both the **IMBED** and **REPLICATE** attributes.

INDEX**(LISTVCAT OPTION)**

LC DD=CBLV01 TYPE=AK INDEX

If **NOINDEX** is the current installation default, **INDEX** can be used to display the index line below the data line for AIX and KSDS files. (**INDEX** and **NOINDEX** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **INDEX** is the default (**CBLVCSW3** bit **X'20'** is off). **NOINDEX** can be made the default by changing this setting.

INFO (nn)**(REPORT VTOC)**

REPORT VTOC DSN BLKSIZE LRECL RECFM CREATED INFO

Display one or more information messages from the available list.

The column width is 21 and the column heading is **INFO** (**INFO** also forms part of the standard report).

The messages which comprise the **INFO** column can be grouped into 2 distinct categories.

File Messages, which appear alongside the file to which they relate.

Summary Messages, which appear after the last report entry.

The Messages which comprise these sections are described as follows:

File Messages**OWNED BY VSAM CATALOG**

The volume is a prime or candidate volume of a VSAM catalog and thus is not available for other VSAM catalogs.

NOT LAST VOL

A sequential file has more extents on another volume, or a file has not been closed. Programs that cancel will leave files unclosed, libraries created by programs such as **LIBR** are not closed and Direct Access files are often not closed.

FILE SERIAL vvvvvv

A sequential file has more extents on another volume, or a file has not been closed. The serial number is different from the disk volume serial number (For a multi-volume file the serial number shown is that of the first extent). It will occur for all existing files after **MOD NEWVOL**. For **MVS** systems, this field is not always maintained and if the first character is not alphanumeric this field is left blank. Printing of this field can be suppressed (see **CBLVCSW2** in **CBLNAME** and the **CBLVCSW2=X'xx'** run-time override option).

VOL SEQ nnnn

The previous extent number has not been found, indicating that previous extent(s) are on a different volume.

****ERROR IN Fn LABEL****

A problem has been detected in the indicated 'format label'.

*****INVALID EXTENT*****

The extent is not totally within the disk extent limits held in the **Format 4 label** in the VTOC.

USER LABEL EXTENT

The extent is a User defined Label Area.

MULTI-EXTENT

The prime extent of a multi-extent file for **SORT=EXT** reports.

Summary Messages

OLDEST DATED yy/mm/dd

The creation date of the oldest file on the volume (This may be shown as **TODAY**). The field will not be printed if the **SUMMARY** option is in force.

LATEST DATED yy/mm/dd

The creation date of the oldest file on the volume (This may be shown as The creation date of the youngest file on the volume (This may be shown as **TODAY**). The field will not be printed if the **SUMMARY** option is in force.

VTOC RECS LIVE....nnn

The number of active VTOC entries. (This includes two for the **Format 4 label** and the **Format 5 label**). A File may utilise more than one label. The **Format 1 label** can hold the data for 3 extents. Each additional 13 extents will require a **Format 3 label**.

VTOC RECS EXPD....nnn

The number of expired VTOC entries (This is independent of the **EXPD/ NOEXPD** option).

VTOC RECS FREE....nnn

The number of VTOC entries that are totally unused (The number available for use includes the expired count above).

VTOC RECS TOTAL....nnn

The **total** number of VTOC entries.

vvvvvv MOUNTED ON cuu

The device that contains the current volume.

NOALLOC=nn

For **VSE** systems only, this indicates that some of the files reported are **work** files which are not allocated until open for output. The numeric value indicates how much space would be used if they were all opened at once (although this is unlikely to happen).

ISC

(LISTVCAT OPTION)

```
LC DD=BIGCAT   ISC
LC DD=BIGCAT   ISC  KEY=/NBJ    * Force use of In-Storage Catalog for KEY=.
```

If **NOISC** is the current installation default, **ISC** can be used to invoke CBLVCAT's In-Storage Catalog processing of **VSAM** (not ICF) catalogs. (**ISC** and **NOISC** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOISC** is the default (CBLNAME option VISCatalog=No so that **CBLVCSW9** bit **X'04'** is off). **ISC** can be made the default by changing this setting.

Even if **ISC** is the installation default, CBLVCAT will not invoke In-Storage Catalog processing when **KEY=** and/or **IGN=** subsetting is specified. To override this, for instances when **KEY=** subsetting results in a significant proportion of a large catalog being selected, explicitly specify the run-time option **ISC** in the control statements.

Notes:

LISTVCAT operations on large **VSAM** catalogs can experience unacceptably long execution times. This is a consequence of the **VSAM** catalog structure. The same is not true of **ICF** catalogs which have an improved structure which is fully exploited by CBLVCAT. Note that CSA storage for ICF catalog control blocks is requested from above the 16MB line.

VSAM catalogs are designed to optimise **direct** access to a dataset. The dataset's attributes are held in small (512 byte) control intervals, and each control interval holds information about only 1 dataset.

This design allows CBLVCAT to give good performance when listing small subsets of large catalogs with **KEY=** and/or **IGN=** since direct processing can be used to advantage.

However, when listing all datasets (or a large proportion) from a large catalog, direct processing becomes a distinct disadvantage. **VSAM** will only read multiple control intervals in one physical Input/Output (I/O) operation when using **sequential** processing. Consequently, using direct processing to report on a large number of datasets requires a large number of physical I/Os, resulting in long execution times.

Using OPTION ISC will dramatically reduce the elapsed time of unacceptably long running jobs. To achieve these gains, CBLVCAT exploits the VSAM Read Ahead Feature to sequentially read the entire Catalog into storage and thereafter uses fast storage access to process records within the Catalog.

The improvements in run-time are subject to the overall system load. For smaller catalogs, in the region of 200 clusters or less, the run-time gains will be less significant.

Where possible, storage for this feature is obtained from above the 16MB line and so users should consider executing CBLVCAT in a VSE partition which allows such storage to be acquired.

ERROR 042 will be returned almost immediately should insufficient storage be available for the requested catalog to be read. In this event, rerun the job in the largest available batch partition. If enough storage is not available, then use OPTION NOISC to process the catalog.

In summary, the following should be taken into consideration for OPTION ISC processing:

1. The benefits, in terms of elapsed time, will vary with the load on your system and the size of the catalog.
2. Sufficient storage address space is required.
3. Any resulting system contention for virtual storage could impact other batch jobs or on-line response times.
4. SUBSET KEY= and/or IGN= could execute faster without option ISC.

IXL (nn)

(REPORT VCAT)

REPORT VCAT DSN TYPE NRECS IXL TIMESTMP

Display the number of index levels.

The column width is 3, the format is '+nn' and the column heading is **IXL**.

This column is also available within the **BUFSP/IXL** combined column in the standard report or within the Combined report field of the same name.

KEY=string

(LISTVCAT,LISTVTOC SUBSET)

KEY=/string

LC	DD=CBLI01	KEY=TEMP	* Select if name starts TEMP.
LV	SYS=10	KEY=/TEMP	* Select if TEMP anywhere in name.

Select files for the report based on a reference to the string supplied.

If the string does not start with a slash (i.e. **KEY=xxx**), the file will be included if the dataset name starts with the string supplied.

If the string starts with a slash (i.e. **KEY=/xxx**), the file will be included if it contains the string characters following the slash **anywhere** in its name.

For MVS systems only, specification of KEY=*string* (but not KEY=*/string*) will automatically generate a **REF=xxx** for the high level qualifier in *string*. As long as an ALIAS exists for that qualifier in the master catalog, the correct user catalog will be searched and so specification of REF=xxx is unnecessary.

Notes

If the string contains blank(s) it must be enclosed in quotes (including the slash).

Multiple **KEY** and/or **IGN** parameters are allowed and are processed as a logical **OR** meaning that if **KEY** and **IGN** are both specified, the order of appearance is important.

1. IGN=ONLY KEY=ONL

Any file starting with "ONLY" would be ignored as it satisfies the first condition. A file starting with "ONLI" would fail the first condition but be selected by **KEY=ONL**.

2. KEY=ONL IGN=ONLY

Any file starting with "ONLY" would be selected by **KEY=ONL** and included in the report, as would a file starting with "ONLI". The second parameter has no effect as all files starting with "ONLY" have been selected by the first condition.

KL (nn)

(REPORT VCAT)

REPORT VCAT DSN LMAX KL BKP CTSIZE

Display the key length for a KSDS/AIX file.

The column width is 3, the format is 'nnn' and the column heading is **KL**.

This column is also available within the **KL,RKP/BLK/IMB** combined column in the standard report or within the Combined report field parameter **KL/BLK/IMB**.

The **relative key position** is available via the **RKP** report parameter.

KL/BLK/IMB (nn)

(REPORT VCAT)

REPORT	VCAT	DSN	TYPE	NRECS	LMAX	KL/BLK/IMB	TIMESTAMP
--------	------	-----	------	-------	------	------------	-----------

Display the key length for a KSDS/AIX file. Display the combined column containing the KSDS/AIX **key length** and **position**, **VSE SAM blocksize** and KSDS **imbed/replicate** attributes.

The column width is 7, the format is 'nnn,nnn' or '+nnnnnn' and the column heading is **KL,RKP /BLK/IMB**.

The individual columns are available via the **KL**, **RKP BLKSIZE** and **IMB** parameters and **KL/BLK/IMB** also forms part of the standard report (as shown below).

TYPE	NRECS	PCNT	ALLOCTOTAL	TRACKSPRIME	FRSPSEC	LMAX	KL,RKP/BLK/IMB	CISIZE	BUFSP/IXL
G KSDS	34	1.4	87	87	3	505	44,0	512	3072
- IX	3	2.5	3	3	3	1017	--IMB--	1024	IXL=2
M SAM (R)	0		TEMP	1	1	4100	4100	4608	9216
ST									
/ SAM (R)	28200+*	94.0**	C=5	C=5	C=5	80	4000	10240	20480
TER									
/ SAM (R)	570+	52.8	C=9	C=9	C=9	4092	4092	10240	20480
/ KSDS (R)	2351	78.4	12	3	3	158	21,0	4096	14436
/ IX	5	10.9	1	1	1	505		512	IXL=2

Example: LISTVCAT KL/BLK/IMB fields (CBL Ref: vmxklkp)

Notes

'**nnn**,
Displa
and F

The **F**

'**nnnr**
A disp

'**--IME**
Indica

'000.000'

Displayed in this format, it is either the Key Length (KL) and the Relative Key Position (RKP) for KSDS files, or, for AIX files, the KL and RKP of the alternate key in the base cluster.

The **RKP** is the displacement of the key in the record relative to position zero (ie. RKP 10 is the eleventh byte of the record).

'nnnn'

A display in this format is the file blocksize for SAM (**VSE** only).

'--IMB--', '--REP--', 'IMB+REP'

Indicates the special index attributes **IMBED** and/or **REPLICATE** (See **IMB** for further details).

LINESPACE=n

(LISTVCAT,LISTVTOC OPTION)

$$LS=n$$

```
LISTVCAT    SUBSET TYPE=K    LS=1    * Override default LS=2
```

A run-time override for the line spacing between files.

The default can be set using the **CBLVCSPA** (CBL VCat SPACING) field in **CBLNAME**, which is supplied containing **X'00'** (giving a default spacing of 2).

Notes

Specifying **LINESPACE=2** is the same as **CBLVCSA=2** or **CBLVCSA=X'02'**.

LINESPACE=1 will leave no space lines between files, **LINESPACE=2** will leave a space line between files.

LIST=YES**(DEL,MOD)**

DEL DEV=104 DSN=x.y.z LIST=YES

For **VSE**, **LIST=YES** produces a VTOC report of the drive on which the last successful operation was performed.

Notes

Combine this with **EJECT=YES** if the report is required on a new page.

If there was no previous operation a VTOC report of the device assigned to SYS000 will be produced.

LISTLABL**(COMMAND)**

LISTL
LL

LISTLABL * No parameters.

For **VSE** systems only, the **LISTLABL** command is used to produce a report containing the Standard Labels from the Label Information Area.

Notes

No parameters are supplied to this command, which must be complete on one logical record.

***** Label group nn could not be accessed ***** would be reported if that group was currently being updated.

No warning is given if a particular **group** of labels **is empty**.

See [example 7](#), in [Guide to List Output](#), for further details.

LISTVCAT**(COMMAND)**

LISTCAT
LISTC
LC

```
LC                               * Default Catalog.
LC DD=CBLV01
LC REF=any.file.in.catalog      * MVS only.
LC VVDS=CBL001                 * Only ICF.
```

The **LISTVCAT** command is used to produce a report of your ICF or VSAM catalogs. The output depends upon the **OPTION** and **REPORT** commands, together with the **TUNE**, **SUBSET** and **MERGE** parameters.

Catalog selection is accomplished using the **DDNAME** parameter (**MVS**, **VSE** and **CMS**) or the **REF** parameter (**MVS DFP 3.1** on only). However, it is possible to supply the **LISTVCAT** command with no other parameters or sub-parameters, resulting in a Catalog report of the default Catalog (see **CBLVCFN** in **CBLNAME** for details of default settings).

For ICF catalogs the parameter **VVDS** allows reporting on the VVDS (possibly across multiple catalogs).

If you are a new user please reference [Introduction Guide to List Output](#) and [Guide to VSAM Tuning](#) for full details and examples of **LISTVCAT** use.

See [Summary of Syntax](#) for a complete list of parameters and sub-parameters available to the **LISTVCAT** command.

LISTVTOC**(COMMAND)**

LISTV
LIST
LV

```
LV                               * SYS000 (VSE only).
LV DD=CBLT01                     * MVS only.
LV SYS=003                       * VSE only.
LV VOL=CBLT22
```

LV DEV=104

The **LISTVTOC** command is used to produce a VTOC report. The output depends upon the **OPTION** and **REPORT** commands, together with the **SUBSET** and **MERGE** parameters.

VTOC selection is accomplished using the **SYS**, **DEV** or **VOL** parameters (**VSE** and **CMS**) or the **DDNAME**, **DEV** or **VOL** parameters (**MVS**). **VSE** users may supply a **LISTVTOC** command with no other parameters or sub-parameters. The result is a VTOC report for the device assigned to SYS000.

If you are a new user please reference [Introduction](#) and [Guide to List Output](#) for full details and examples of **LISTVTOC** use.

See [Summary of Syntax](#) for a complete list of parameters and sub-parameters available to the **LISTVTOC** command.

LMAX

(LISTVCAT OPTION)

LISTVCAT DD=CBLV01 OPTION LMAX

If **AVRL** (average record length) is the current installation default, **LMAX** can be used to display the defined maximum record length. **AVRL** and **LMAX** are mutually exclusive options.

In the CBL supplied version of CBLNAME, **LMAX** is the default (**CBLVCSW3** bit **X'10'** is off), however **AVRL** may be made the default by changing this switch.

Note

For notes relating to **LMAX** see **REPORT VCAT LMAX** below.

LMAX (nn)

(REPORT VCAT)

REPORT VCAT DSN TYPE NRECS LMAX AVRL TIMESTMP

Display the maximum record length as specified at define time.

The column width is 7, the format is '+nnnnnV' and the heading is **LMAX** (**LMAX** forms part of the standard Catalog report if the **LMAX / AVRL** option is set to **LMAX**).

Notes

For **RRDS** files, this is the actual length, but for other types of file, the true length may be any value up to **LMAX**.

A "V" appended to the right of the numerical value (**nnnnV**), indicates that the file's record lengths are variable.

For a non-loaded file (one that has been defined but has had no data loaded) this means that it was defined with an average and maximum record length that differ. On loaded files, it can also mean that the defined length is inconsistent with the space the file occupies (it is possible to define the record length as 2000 and then only load 30 byte records!). Tuning calculations will, in this case, be based on the effective record length.

Files defined with maximum and average record length **equal**, but which have records of differing sizes loaded, **will** also be suffixed with the 'V'.

Files defined with maximum and average record length **different**, but which have records of only equal sizes loaded, **will not** be suffixed with the 'V'.

LOBLK=nnnn

(LISTVCAT,LISTVTOC SUBSET)

LV VOL=CBLT06 LOBLK=13000 HIBLK=13999 @h0

For **FBA Disks only** (see **HICYL** or **HITRK** for CKD). **LOBLK** is used to select files whose extent(s) reside fully or partially above this block limit.

See Notes in **HIBLK** for further information and rules regarding the display of extent information.

LOCISZ=nnnn

(LISTVCAT SUBSET)

LISTVCAT DD=CBLI11 LOCISZ=2048 HICISZ=4096

Select files with a **CI size** greater than or equal to the value specified.

LOCISZ may be used with **HICISZ** to restrict to a specified range of CI sizes.

LOCYL=nnnn

(LISTVCAT,LISTVTOC SUBSET)

 LV DD=DD1 SORT=DSN LOCYL=2 HICYL=10
 LC DD=CBLV05 LOCYL=882 HICYL=885 @h0

For **CKD Disks only** (see **LOBLK** for FBA). **LOCYL** is used to select files whose extent(s) reside fully or partially above this cylinder limit.

See Notes in **HIBLK** for further information.

LODATE=date

(LISTVCAT,LISTVTOC SUBSET)

 LV VOL=CB9009 LODATE=930614 HIDATE=93/10/12
 LC DD=CBLV05 LODATE=-15 * Files Changed in the last 15 days

Select files with a date greater than or equal to the value specified.

Notes

For notes on use and format of LODATE arguments, see **HIDATE**.

LOEXP=date

(LISTVTOC SUBSET)

 LV DD=CBLT03 LOEXP=93/10/27
 LV DD=CBLT03 LOEXP=0 HIEXP=+1 * Expire today or tommorrow

Select files that expire on or after this date.

Specify a date range by using **HIEXP** and **LOEXP** together.

For notes on use and format of LOEXP arguments, see **HIEXP**.

LOTRK=nnnn

(LISTVCAT,LISTVTOC SUBSET)

LISTVTOC DDNAME=DD1 LOTRK=10 HITRK=30

For **CKD Disks only** (see **LOBLK** for FBA). **LOTRK** is used to select files whose extent(s) reside fully or partially above this track limit.

LOTRK may be used with **HITRK** to define upper and lower boundaries.

See Notes in **HIBLK** for further information and rules regarding the display of extent information.

LRECL (nn)

(REPORT VTOC)

REPORT VTOC DSN TYPE BLKSIZE LRECL RECFM KEYLP

Display the logical record length.

The column width is 6, the format is '+nnnnn' and the heading is **LRECL** (**LRECL** also forms part of the standard report).

VSE SAM does not automatically record a file's geometry (RECFM, LRECL and BLKSIZE) in disk VTOCs. However, it is common for VSE applications that perform I/O to include this information in the DTF control block and so write the file's geometry to its Format 1 record in the VTOC. CBLVCAT reports the lrecl value, if present, otherwise blanks are displayed in the LRECL column.

MAXLRECL=nnnn/KEEP

(LISTVCAT TUNE)

MAXRECL=nnnn/KEEP

```
LC      DD=CBLV01      KEY=TEST.FILE      TUNE      MAXLRECL=400 @h0
```

Sets the maximim record length for a tuning run.

It is provided as an override to the the maximum record length which was set at **DEFINE** time (see **LMAX**) **MAXLRECL=KEEP** uses the **defined value** rather than allowing CBLVCAT to increase it.

See **AVLRECL=nnn** for a discussion of **AVLRECL** and **MAXLRECL** for **AIX** files and the effect of **AVLRECL** on maximum record length.

MERGE

(LISTVCAT,LISTVTOC)

```
REPORT VCAT      DSN      SORT CISIZE
LC      DD=CBLI11      MERGE
LC      DD=CBLI12      * Will combine this command with the next one
```

MERGE may be used on a **LISTVTOC/ LISTVCAT** command provided a **REPORT** statement for the appropriate operation has already been supplied. It causes the output from the current command to be merged with the output from the command that follows, enabling the listings from two or more commands to be combined into one report (See [examples 12-18](#) in [Guide to List Output](#)).

Notes

If no **SORT** or **SORTD** parmeter is supplied, **MERGE** will sort on the first **REPORT** parameter.

Using **MERGE** results in 'DATASET NAME' being used as the heading for the **DSN** column, if specified.

If the applicable **REPORT** statement does not include a **SORT** parameter, a default sort (ascending) is performed with the first parameter in the **REPORT** list as the primary sort field.

A **MERGE** of several commands referencing the same Catalog/VTOC with different **SUBSET** parameters is effectively an **OR** condition. Any entries which would be selected by multiple **SUBSET** parameters will only be reported once (see [example 13](#) in [Guide to List Output](#)).

WARN 010 messages (NO FILES SELECTED) are suppressed when merging **SUBSET** output from more than one report.

For mixed reports (**LISTVCAT** with **LISTVTOC**), the report headings and sort positions are taken from the **REPORT** parameters applicable to the **last** command in the **MERGE** list. It is therefore possible to have **LISTVTOC** headings over unrelated **LISTVCAT** data and vice-versa.

For **LISTVTOC** For **DEV=ALL MERGE** (or **LISTVCAT** (or **REF=ALL MERGE** - ICF with DFP 3.1 or higher) the multiple **LISTVTOC** (or Catalog) listings are combined into one customised report. If either of these reports need to be merged with another report a **second MERGE** parameter is required.

e.g.

```
LV DEV=ALL MERGE MERGE
LC REF=ALL MERGE
```

ERROR 16 is issued for **MERGE** if a **REPORT** command is not supplied prior to the relevant **LISTVCAT/LISTVTOC** (or set of **LISTVCAT/LISTVTOC**) command(s).

MOD

(COMMAND)

M

```
MOD DEV=104      VOL=TEST05      DSN=ABC.TEST.FILE      NEWDSN=ABC.LIVE.FILE
```

For **VSE** non-VSAM managed files only, allows modification of a file's **data set name**, **expiry date**, **volume serial number** and **owner-id**.

Note

Select and optionally check a device using one, or any combination of the **DEV**, **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

For modification of a disk's volume serial number, **VOL** is used only as a check that the correct disk has been selected. i.e. a **DEV** and/or **SYS** and **DEV** and/or **SYS** parameter must also be coded.

WARNING - Take great care when modifying disk volume serial numbers.

MOUNT**(LISTVCAT OPTION)**

```
LC DD=ICF01 OPTION MOUNT
```

For **ICF Catalogs only**. If **NOMOUNT** is the current installation default, **MOUNT** can be used to cause a **LISTVCAT** command to issue **system mount requests** for any **VVDS volume** not on line (**MOUNT** and **NOMOUNT** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **MOUNT** is the default (**CBLVCSW3 X'80'** bit off). **NOMOUNT** may be made the default by changing this switch.

NEWDSN=xxx.xxx.xx.etc**(MOD)**

```
MOD DEV=161          * Choose device
VOL=PACK11          * Check volume (optional)
DSN='FILE ABC'      * Quotes required (for blanks)
NEWDSN=FILE.ABC     * No quotes required
```

For **VSE** systems only, change a file's data set name.

Notes

If the new name contains blanks, the **NEWDSN** argument must be enclosed in single quotes.

The file's current data set name must be supplied via the **DSN** parameter.

Select and optionally check a device using one, or any combination of the **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

NEWOWN=xxx**(MOD)**

```
MOD SYS=1          * Choose device
OWN=PROJECT1      * Check owner (optional)
NEWOWN=PROJ2      * Up to 14 chars
```

For **VSE** systems only, used to modify the 14-byte owner field in the disk volume label.

One to fourteen alphanumeric characters must be provided (if less than 14 bytes are provided, the user field is left justified and padded with blanks).

Notes

If the owner-id contains blanks, the **NEWOWN** argument must be enclosed in single quotes.

Select and optionally check a device using one, or any combination of the **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

NEWVOL=xxxxxx**(MOD)**

```
MOD SYS=1          * Choose device
VOL=PACK11        * Check volume (optional)
NEWVOL=PACK12     * New volume serial number
```

For **VSE** systems only, used to change the disk volume serial number.

Six alphanumeric digits must be provided.

Notes

Select and optionally check a device using one, or any combination of the **DEV**, **SYS** and **VOL** parameters. The **OWN** parameter may also be used as a means of checking the device.

NOALIAS

(LISTVCAT OPTION)

 LC DD=CBLI11 OPTION NOALIAS

For **MVS** systems only. If **ALIAS** is the current installation default, **NOALIAS** can be used to stop the alias items appearing as separate entries in the report (They will still appear as a reference for the appropriate **USERCAT**). **ALIAS** and **NOALIAS** are mutually exclusive **OPTIONS**.

In the CBL supplied version of **CBLNAME**, **ALIAS** is the default (**CBLVCSW1** bit **X'08'** is on). **NOALIAS** can be made the default by changing this setting.

NOASSOC

(LISTVCAT OPTION)

 LC DD=CBLV01 OPTION NOASSOC * Override CBLVCSW1=X'80'

If **ASSOC** is the current installation default, **NOASSOC** can be used to suppress file association information on the Catalog report (**ASSOC** and **NOASSOC** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **ASSOC** is the default (**CBLVCSW1** bit **X'80'** is on). **NOASSOC** can be made default by changing this switch.

See **ASSOC** for speed considerations when using a **KEY** parameter.

NODEFINE

(LISTVCAT OPTION)

 LC DD=CBLV01 OPTION NODEFINE * Override CBLVCSW6=X'80'

If **DEFINE** is the current installation default, **NODEFINE** can be used to suppress the output file of IDCAMS **DELETE/DEFINE** statements. (**DEFINE** and **NODEFINE** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NODEFINE** is the default (**CBLVCSW6** **X'80'** bit off). **DEFINE** may be made the default by changing this switch.

NOEXPD

(LISTVTOC OPTION)

 LV VOL=CBLT01 KEY=/CICS OPTION NOEXPD NOPERM

If **EXPD** is the current installation default, **NOEXPD** can be used to display the expiry date (instead of '**EXPD**') for files that have expired (**EXPD** and **NOEXPD** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **EXPD** is the default (**CBLVCSW2** bit **X'04'** is off). **NOEXPD** can be made the default by changing this setting.

See **EXPD** for an example showing the effect of **NOEXPD** on the **Freespace table**.

NOFREE

(LISTVTOC OPTION)

 LV VOL=CBLT01 OPTION NOFREE * Override CBLVCSW2=X'10'

If **FREETAB** (or **FREE**) is the current installation default, **NOFREE** can be used to suppress Freespace extent information. (**FREE**, **FREETAB** and **NOFREE** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOFREE** is the default (**CBLVCSW2** bit **X'10'** is off). **FREE** or **FREETAB** can be made the default by changing this setting.

NOGDGDSN**(LISTVCAT OPTION)**

LC DD=CBLI22 NOGDGDSN NOGDGRPT * Override CBLVCSW6=X'60' (X'40'+X'20')

If **GDGDSN** is the current installation default, **NOGDGDSN** can be used to suppress the GDG Dataset Name (**GDGDSN** and **NOGDGDSN** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOGDGDSN** is the default (**CBLVCSW6** bit X'20' set off). **GDGDSN** can be made the default by changing this setting.

NOGDGRPT**(LISTVCAT OPTION)**

LC DD=CBLI22 NOGDGDSN NOGDGRPT * Override CBLVCSW6=X'60'

If **GDGRPT** is the current installation default, **NOGDGRPT** can be used to suppress the repetition of unchanged GDG information on overflow information lines (**GDGRPT** and **NOGDGRPT** are mutually exclusive options). See **GDGDSN** for an example.

In the CBL supplied version of **CBLNAME**, **NOGDGRPT** is the default (**CBLVCSW6** bit X'40' set off). **GDGRPT** can be made the default by changing this setting.

NOINDEX**(LISTVTOC OPTION)**

LC DD=CBLI22 OPTION NOINDEX * Override CBLVCSW3=X'20'

If **INDEX** is the current installation default, **NOINDEX** can be used to suppress index lines for AIX and KSDS files (**INDEX** and **NOINDEX** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **INDEX** is the default (**CBLVCSW3** bit X'20' is off). **NOINDEX** can be made the default by changing this setting.

Note

NOINDEX can be useful for reports that will be post-processed as output will be one line per file.

NOISC**(LISTVCAT OPTION)**

LC DD=VSESPUC NOISC * Suppress In-storage Catalog processing.

If **ISC** is the current installation default, **NOISC** can be used to suppress CBLVCAT's In-Storage Catalog processing of **VSAM** catalogs. (**ISC** and **NOISC** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOISC** is the default (CBLNAME option VISCatalog=No so that **CBLVCSW9** bit X'04' is off).

See option **ISC** for notes on In-Storage Catalog processing.

NOMOUNT**(LISTVCAT OPTION)**

LC DD=ICF01 OPTION NOMOUNT * Override CBLVCSW3=X'80'

For **ICF Catalogs only**. If **MOUNT** is the current installation default, **NOMOUNT** can be used to suppress system mount requests for any **VVDS volume** not on line (**MOUNT** and **NOMOUNT** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **MOUNT** is the default (**CBLVCSW3** X'80' bit off). **NOMOUNT** may be made the default by changing this switch.

Note

Any offline VVDS volume encountered will cause a VVDS NOT AVAILABLE warning message.

NOOVLAY**(LISTVCAT,LISTVTOC OPTION)**

LC DD=CBLI22 NOOVLAY * Override CBLVCSW3=X'40'

For the **standard report only**. If **OVLAY** is the current installation default, **NOOVLAY** can be used to suppress the overwrite of fields following a data set name which is longer than the **DSN** field. The data set name is printed immediately and all other fields are printed on the following line. (**OVLAY** and **NOOVLAY** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOOVLAY** is the default (**CBLVCSW3** bit **X'40'** set off). **OVLAY** can be made the default by changing this setting.

NOPCAP**(LISTVCAT OPTION)**

LC DD=CBLI22 TUNE NOPCAP NOPJCL

If **PRTCAP** is the current installation default, **NOPCAP** can be used to suppress print of the third tuning output block (the **CAP Block**). **PRTCAP** and **NOPCAP** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **PRTCAP** is the default (**CBLVCSW3** bit **X'04'** set off). **NOPCAP** can be made the default by changing this setting.

See **CAPacity block** in **Tuning Output** for details of this tuning block.

NOPERM**(LISTVTOC OPTION)**

LV VOL=CBLT01 KEY=/CICS OPTION NOEXPD NOPERM

If **PERM** is the current installation default, **NOPERM** can be used to display the expiry date (instead of '**PERMANENT**') for files that expire on or after 99/365 (**PERM** and **NOPERM** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **PERM** is the default (**CBLVCSW2** bit **X'02'** is off). **NOPERM** can be made the default by changing this setting.

Note

Dates will be displayed as 'yy/mm/dd' or '20yy/mm/dd'.

NOPJCL**(LISTVCAT OPTION)**

LC DD=CBLI22 TUNE NOPCAP NOPJCL

If **PRTJCL** is the current installation default, **NOPJCL** can be used to suppress print of the fourth tuning output block (the **JCL Block**). **PRTJCL** and **NOPJCL** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **PRTJCL** is the default (**CBLVCSW3** bit **X'02'** set off). **NOPJCL** can be made the default by changing this setting.

See **JCL block** in **Tuning Output** for details of this tuning block.

NOPSEV**(LISTVCAT OPTION)**

LC DD=CBLI22 TUNE DEFINE NOPSEV NOPCAP NOPJCL

If **PRTSEV** is the current installation default, **NOPSEV** can be used to suppress print of the first tuning output block (the **SEV Block**). **PRTSEV** and **NOPSEV** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **PRTSEV** is the default (**CBLVCSW3** bit **X'08'** set off). **NOPSEV** can be made the default by changing this setting.

See **SEV block** in **Tuning Output** for details of this tuning block.

NOVOL**(LISTVCAT OPTION)**

LC DD=CBLI22 NOASSOC NOALIAS NOVOL

If **VOLINFO** is the current installation default, **NOVOL** can be used to suppress the volume information (**VOLINFO** and **NOVOL** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **VOLINFO** is the default (**CBLVCSW1** bit **X'10'** set on). **NOVOL** can be made the default by changing this setting.

See **JCL block** in **Tuning Output** for details of this tuning block.

Note

Specifying **CBLVCEXT=nn** will force **VOLINFO**.

NRECS (nn)**(REPORT VCAT)**

REPORT VCAT DSN TYPE NRECS LMAX AVRL TIMESTMP

Display the number of records in each file.

The column width is 10, the format is '+nnnnnnnn+' and the heading is **NRECS**. (**NRECS** also forms part of the Standard report).

Notes

The value displayed is the total number of records loaded (except for **RRDS** files when it is the number of records **inserted**).

The value displayed will not be accurate if the file is currently in use by another program, as the catalog is not updated until file closure.

A '+' suffix (**nnnnnn+**) indicates that the Catalog record count has not been maintained by VSAM (This generally occurs when processing has been by control interval access instead of by logical record). In this case the value displayed is CBLVCAT's **estimate** based upon the high used RBA. (The estimate assumes that all records are of the defined maximum length and that the last control area contains one record, i.e. the minimum number of records).

An empty file (one that has been defined but not loaded) is displayed in one of the following formats:

0(nnnn), **0(nn.nK)**, **0(nnnK)**, **0(nn.nM)**, **0(nnnM)**,

K or **M** indicate **KILO** or **MEGA** and the value in parentheses indicates the number of records that can be loaded into the primary allocation (See **ALLOC**).

NRECS=nnnn**(LISTVCAT SUBSET)**

LC DD=CBLI11 NRECS=500

Select files containing a minimum of nnnn records.

When specified as **NRECS=0** the subset selects all **empty** files.

NSEC (nn)**(REPORT VCAT)**

REPORT VCAT BLKSIZE NSEC

Display the number of secondary extents.

The column width is 4, the format is '+nnn' and the heading is **NSEC**.

Notes

NSEC reports the number of **extents**, not **allocations**, since it is the number of extents which limits the expansion of the file.

Each allocation, Primary and Secondary, may be satisfied with 1 or more extent(s). Therefore, secondary extents may exist for a file that has a single, primary allocation.

ICF and VSAM support up to 123 extents, except for VSAM cataloged REUSE or UNIQUE files which are restricted to 16 extents per volume. NSEC assists the user in identifying fragmentation, i.e. more than 1 extent, of Primary and Secondary Allocations.

Severity messages are generated when the number of secondary extents reaches the **CBLVCALW** and **CBLVCALE** secondary extent thresholds. See **CBLNAME** for the threshold values and **Messages** for an expansion of the messages.

Additional secondary extent warnings are shown as part of the **ALLOCS** field (The extents themselves can also be shown depending upon the **CBLVTEXT CBLNAME** switch or **CBLVTEXT=nn** run-time option).

See note in **ALLOCS** regarding Secondary Extents and Allocations.

OPTION

(COMMAND,LISTVCAT,LISTVTOC)

OPTIONS

OPT

```
OPTION  RECFM FREE NOEXPD
LV      VOL=CBLT04

OPTION  ALIAS NOASSOC OVLAY
LC      DD=CBLV91
```

The keyword **OPTION** indicates that report tailoring sub-parameters follow.

The sub-parameters select the report fields (Standard report) and also the type and amount of data to be printed for each file (Standard and Customised reports).

Notes

OPTION may be used as an operation itself, or as a parameter of another operation word. When used as a parameter, the word **OPTION** is optional as all its associated sub-parameters are unique.

Options are set for the remainder of the run, or until reset by another **OPTION** parameter.

Any **LISTVTOC** option may be specified during a **LISTVCAT** operation and vice-versa.

All **OPTION** sub-parameters are part of **CBLNAME** and can be made the installation default (see **CBLNAME**).

See **OPTION Summary** for a full list of **OPTION** parameters.

OVLAY

(LISTVCAT,LISTVTOC OPTION)

```
LC      DD=CBLI22  OVLAY
```

For the **Standard report only**. If **NOOVLAY** is the current installation default, **OVLAY** can be used to allow overwrite of the field(s) that follow DSN, by data set names that are longer than the DSN field width. (**FREE**, **FREETAB** and **NOFREE** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **NOOVLAY** is the default (**CBLVCSW3** bit **X'40'** is off). **OVLAY** can be made the default by changing this setting.

OWN=xxx

(DEL,LISTVTOC,MOD)

OWNER=xxx

```
MOD  SYS=1          * Choose device
      OWN=PROJECT1  * Check owner (optional)
      NEWOWN=PROJ2  * Up to 14 chars
```

For **VSE** systems only, the **OWN** parameter used to check the volume owner-id of the selected volume.

Notes

If **OWN** does not match the owner-id, further processing depends on the **FAIL** parameter. (which defaults to **CANCEL**).

Select the volume via the **DEV** and/or **SYS** parameters.

The **owner field** in the **VTOC** may be modified via **MOD NEWOWN=xxx**.

PAGEDEPTH=nn(LISTVCAT,LISTVTOC OPTION)

PD=nn

```
LC      DD=CBLI11      PAGEDEPTH=32767      * One set of headings.
```

A run-time override for the number of lines on the page.

The default can be set using the **CBLCLINE** (CBL Common LINEs) field in **CBLNAME**, which is supplied containing **X'00'** (resulting in 58 lines for **MVS** and the SYSLST system default for **VSE**). **Take care** when changing the **CBLNAME** value **CBLCLINE** as **SELCOPY** users will be affected.

Notes

Setting a very high **PAGEDEPTH**, e.g. 32767 (32K-1), causes no page throws and consequently only one set of headings. This can be a useful technique when **post-processing** reports.

PAGEWIDTH=nn(LISTVCAT,LISTVTOC OPTION)

PW=nn

```
OPTION  PAGEWIDTH=80      * Gives  PW 80
LC      DD=CBLI01  PAGEWIDTH=160  * Gives  PW 160
REPORT VTOC  DSN  CREATED  * Default to PW 72
```

A run-time override for the report page width.

Heading and footing lines are adjusted according to the **PAGEWIDTH** parameter.

The default can be set using the **CBLCPW** (CBL Common Page Width) field in **CBLNAME**, which is supplied containing **AL1(0)** (See notes below). **Take care** when changing the **CBLNAME** value **CBLCPW** as **SELCOPY** users will be affected.

Notes

Data within the report lines are **unaffected** by this parameter.

The argument of the **last PAGEWIDTH** parameter takes effect over the **entire report**.

The **minimum PAGEWIDTH** is 72 bytes and the **maximum** is 160 bytes (**ERROR 061 - INVALID PAGE GEOMETRY** will be generated for an invalid **PAGEWIDTH**).

If **PAGEWIDTH** is not coded and the **CBLNAME** value for **CBLCPW** is set to zero (**AL1(0)**), CBLVCAT selects an appropriate heading width. For a standard report this is 132 characters, whereas for **REPORT VCAT/VTOC** the width as implicitly **defined** by the **REPORT** operation will be used.

The Page Number value is always right adjusted to the defined or implied **PAGEWIDTH**. The Operating System and Jobname are omitted and the date in the heading is compressed into the International Date Standard Format (YY/MM/DD HH:MM).

The time and date will be shortened or removed altogether for small page widths with large headings.

PASS=passwd(LISTVCAT)

```
LC  DD=CBLI11  PASS=CBL
```

Specify the VSAM read password for the catalog (if one is required).

When a password is in effect and none is specified, the system, not CBLVCAT, will ask the operator to supply it.

PCNT(LISTVCAT OPTION)

```
LC  DD=CBLI11  OPTION  PCNT      * Override CBLVCSW1=X'00'
```

If **UNUSED** is the current installation default, **PCNT** can be used to display the percentage of space used (**PCNT**) column instead of the amount of space unused column (**UNUSED**). (**PCNT** and **UNUSED** are mutually exclusive options).

In the CBL supplied version of **CBLNAME**, **PCNT** is the default (**CBLVCSW1** bit **X'04'** is on). **UNUSED** can be made default by changing this switch.

See the following **REPORT VCAT PCNT** for further information and **ALLOC3** for a description of the other fields generated by this option.

PCNT (nn)

(REPORT VCAT)

REPORT VCAT DSN 22 TYPE NRECS PCNT ALLOC4

Display the percentage of **currently** allocated space that contains data.

The column width is 8, the format is **'**nn.n**'** and the heading is **PCNT** (**PCNT** also forms part of the standard report if **PCNT/UNUSED/** option is set to **PCNT**).

Notes

PCNT is calculated as the ratio of the current record count (the **NRECS** field) compared to CBLVCAT's estimate of the capacity of the total allocation (the **ALLOC4** field).

If the **PCNT** value has reduced even though the number of records has increased, the allocation size has changed. This will be shown if you display the allocation columns.

'nn.n**'**

Indicates that the percent full warning threshold has been reached (This also enables the **SEV 1-09** warning message). This default threshold may be changed via **CBLVCPCF** in **CBLNAME**, or at run time via the **CBLVCPCF** option.

'ALL **'**

The space currently allocated is full and additions to the file will cause **secondary allocations**.

'FULL **'**

The space currently allocated is full and no secondary allocation has been specified (The file cannot be expanded).

PERM

(LISTVTOC OPTION)

LV VOL=CBLT01 PERM EXPD

If **NOPERM** is the current installation default, **PERM** can be used to display **'PERMANENT'** (instead of the actual expiry date) for files that have an explicit expiry date of **1999/365** or **1999/366**. (**PERM** and **NOPERM** are mutually exclusive options).

Note that an expiry date of 1999/12/31 which has been calculated from a retention period value is **not** considered permanent by the operating system.

In the CBL supplied version of **CBLNAME**, **PERM** is the default (**CBLVCSW2** bit **X'02'** is off). **NOPERM** can be made the default by changing this setting.

PHYREC (nn)

(REPORT VCAT)

REPORT VCAT DSN 22 NRECS PHYREC

Display the Physical Record size used by VSAM.

The column width is 7, the format is **'+nnnnn*'** and the heading is **PHYREC**.

Notes

The range of allowable physical record sizes depends on the operating system. The actual value that VSAM chooses depends on the VSAM level, the file's **CI size** and the device type.

For tuning recommendations, CBLVCAT will choose a CI size based on the appropriate physical record size (i.e. the CI size is chosen so that 1 CI contains 1 physical record which results in minimum I/O).

PRTCAP**(LISTVCAT OPTION)**

LC DD=CBLV01 TUNE KEY=ABC PRTCAP NOPJCL

If **NOPCAP** is the current installation default, **PRTCAP** can be used to display the third tuning output block (the **CAP Block**). **PRTCAP** and **NOPCAP** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **PRTCAP** is the default (**CBLVCSW3** bit **X'04'** is off). **NOPCAP** can be made default by changing this switch.

See **Tuning Output** for details of the the **CAPacity Block**).

PRTJCL**(LISTVCAT OPTION)**

LC DD=CBLV01 TUNE KEY=ABC PRTJCL NOPJCL

If **NOPJCL** is the current installation default, **PRTJCL** can be used to display the fourth tuning output block (the **JCL Block**). **PRTJCL** and **NOPJCL** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **PRTJCL** is the default (**CBLVCSW3** bit **X'02'** is off). **NOPJCL** can be made default by changing this switch.

See **Tuning Output** for details of the the **JCL Block**).

PRTSEV**(LISTVCAT OPTION)**

LC DD=CBLV01 TUNE KEY=ABC PRTSEV NOPSEV

If **NOPSEV** is the current installation default, **PRTSEV** can be used to display the first tuning output block (the **SEV Block**). **PRTSEV** and **NOPSEV** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **PRTSEV** is the default (**CBLVCSW3** bit **X'08'** is off). **NOPSEV** can be made default by changing this switch.

See **Tuning Output** for details of the the **SEVerity Block**).

QUERY**(COMMAND)**

Q

The **QUERY** command can **only** be used with the **CBLNAME** parameter and displays the contents of the CBLVCAT fields within **CBLNAME** (see **QUERY CNLNAME** in the chapter **CBLNAME** for an example).

Notes

Any temporary changes (via **OPTION** parameters) will be reflected in the current values displayed.

The **QUERY** command, unlike other operations, must be complete on one logical record.

RAW=fname**(LISTVCAT,LISTVTOC OPTION)**

```
OPTION  RAW=CBLVRAW
LISTVCAT KEY=NBJS.XTC00
LISTVTOC VOL=CBLM01
```

RAW=fname may be specified as an option on **LISTVCAT**, **LISTVTOC** or **LISTLABEL** in order to write a record containing all available **REPORT** fields to the specified file for each dataset listed.

fname is the MVS ddname or VSE label assigned to a pre-allocated data set.

Notes

This allows users to generate output which may easily be postprocessed using a utility such as SELCOPY.

The format of each record is as follows:

LISTVCAT Fields (Max LRECL 542)

REPORT field	Offset	Length	REPORT field	Offset	Length
DSN	000	44	CI/CA	248	06
TYPE	044	08	SHR	254	05
NRECS	052	10	S/C	259	05
PCNT	062	08	DEFINED	264	11
ALLOCT	070	08	EXPIRES	284	10
ALLOCP	086	08	SPLITCI	294	05
ALLOCS	094	10	SPLITCA	299	05
FRSP	104	07	SEVL	304	04
LMAX	111	07	VOLUME	308	06
KL/BLK/IMB	118	08	GMAX	314	04
CISIZE	126	07	GVER	318	04
BUFSP/IXL	133	07	GGEN	323	05
EXCPS	140	07	STD1	329	10
TIMESTMP	147	20	STD2	339	08
ALLOCU	167	06	HIUSERBA	347	11
NSEC	173	04	HIALLRBA	358	11
AVRL	178	07	FREEBYTES	369	11
PHYREC	185	07	COMPONENT	380	44
RECSTATS	192	24	ENTRY	424	44
KL	216	03	SMSS	468	08
RKP	219	05	SMSD	477	08
BLKSIZE	224	07	SMSM	486	08
IMB/REP	231	07	EXT	494	04
BUFSP	238	07	CATALOG	498	44
IXL	245	03			

LISTVTOC Fields (Max LRECL 175)

REPORT field	Offset	Length	REPORT field	Offset	Length
DSN	000	44	BLKSIZE	106	07
CYL/HD	044	16	LRECL	113	06
CISIZE	060	06	RECFM	119	05
START	066	08	CREATED	124	10
ALLOC	074	07	INFO	134	21
USED	081	07	VOLUME	155	06
TYPE	088	07	ACCESSED	161	10
EXPIRES	095	11	UNIT	171	04

LISTLABL Fields (Max LRECL 136)

REPORT field	Offset	Length	REPORT field	Offset	Length
PART	000	05	EXPY	083	08
FNAM	005	07	BUFI	091	05
NAME	012	44	BUFD	096	05
UNIT	057	07	STRT	101	11
VSER	064	06	ALLC	112	11
CATY	070	07	RECL	124	05

DISP	077	05	INFO	129	07
------	-----	----	------	-----	----

RECDEL (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE NRECS RECDEL RECINS

Display the number of records deleted since the file was defined or re-loaded.

The column width is 6, the format is '+nnnnK' and the heading is **RECS DELETD** (**RECS DELETD** also forms part of the **RECSTATS** combined column).

Notes

The file statistics are not always reliable, particularly if the file has been updated using control interval access.

RECFM (nn)**(REPORT VTOC)**

REPORT VTOC DSN BLKSIZE LRECL RECFM TIMESTMP

Display the Record Format.

The column width is 5 and the column heading is **RECFM** (**RECFM** also forms part of the standard report).

The possible values are:

ASCII	The file is encoded in ASCII, not EBCDIC.
F	Fixed, unblocked.
FA	Fixed, unblocked, ASA characters.
FB	Fixed, Blocked.
FBA	Fixed, Blocked, ASA characters.
FBS	Fixed, Standard Blocks.
U	Undefined format.
V	Variable, unblocked.
VA	Variable, unblocked, ASA characters.
VBA	Variable, Blocked, ASA characters.
VBS	Variable, Blocked, Spanned.

VSE SAM does not automatically record a file's geometry (RECFM, LRECL and BLKSIZE) in disk VTOCs. However, it is common for VSE applications that perform I/O to include this information in the DTF control block and so write the file's geometry to its Format 1 record in the VTOC. CBLVCAT reports the record format, if present, otherwise blanks are displayed in the RECFM column.

RECINP (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE NRECS RECINP RECUPD

Display the number of records read since the file was defined or re-loaded.

The column width is 6, the format is '+nnnnK' and the heading is **RECS INPUT** (**RECS INPUT** also forms part of the **RECSTATS** combined column).

Notes

The file statistics are not always reliable, particularly if the file has been updated using control interval access.

RECINS (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE NRECS RECINS RECDEL

Display the number of records inserted since the file was defined or re-loaded.

The column width is 6, the format is '+nnnnK' and the heading is **RECS INSRTD** (**RECS INSRTD** also forms part of the **RECSTATS** combined column).

Notes

The file statistics are not always reliable, particularly if the file has been updated using control interval access.

RECORDS=nnn**(LISTVCAT TUNE)**LC DD=CBLV01 KEY=ABC.FILE
TUNE RECORDS=60000 DEFINE @h0

Sets the number of records to be used for a tuning run.

It is useful when **modelling** new files, or when the catalog information for the file is believed not to be reliable (e.g. as a result of Control Interval access instead of logical record).

See **GROWTH** for a discussion of the interaction of the **GROWTH** and **RECORDS** parameters.

See [Guide to VSAM Tuning](#) for further details.

RECSTATS (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE NRECS RECSTATS

Display the record statistics for a file (**DEL**, **INS**, **UPD** and **INP**).

This field comprises four columns, each with the format '+nnnnK'. The column width is 24 and the overall heading is -- **RECORD STATISTICS** --.

Notes

The four columns which comprise this field are available separately as **RECDEL**, **RECINS**, **RECUPD** and **RECINP**.

The file statistics are not always reliable, particularly if the file has been updated using Control Interval access.

RECUPD (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE NRECS RECINP RECUPD

Display the number of records updated since the file was defined or re-loaded.

The column width is 6, the format is '+nnnnK' and the heading is **RECS UPDATD** (**RECS UPDATD** also forms part of the **RECSTATS** combined column).

Notes

The file statistics are not always reliable, particularly if the file has been updated using control interval access.

REF=xxx.xx**(LISTVCAT)**

LC REF=TEST3.TRANS.HIST * Select the Catalog containing this file.

For **MVS** systems only, **REF** may be used (instead of **DDNAME**) to select the required Catalog.

Notes

REF need not be specified if KEY=*string* is specified with a high level qualifier which is an ALIAS cataloged in the master catalog. See **KEY=string**.

The argument of the **REF** parameter may be the catalog itself (self-defining entry), its ALIAS or the Data Set Name of any file in the Catalog (See also **REF=ALL**).

This method does not need a **DD statement** as it dynamically allocates the Catalog.

REF=ALL**(LISTVCAT)**

ALL

```
LC      REF=ALL
```

For **MVS** systems only, **REF=ALL** specifies that all catalogs are to be processed.

Notes

This feature is only available to **ICF** Catalogs with **DFP 3.1** or higher.

Each Catalog is a separate report (For a customised report **REF=ALL MERGE** allows the user to produce a single report across the whole system. See **example 16** and **example 17** in **Guide to List Output**).

Users should note that **REF=ALL** has obvious storage and run-time considerations and should only be used for system wide files. For files across a small number of catalogs it is more efficient to use **MERGE** to combine several different **LISTVCAT** commands.

If the synonym **ALL** is used, it must follow immediately after the **LISTVCAT** command.

REPORT**(COMMAND)**

```
REPORT VCAT  DSN 22  SORT NRECS TYPE RECINS RECDEL
REPORT VTOC  DSN      TYPE BLKSIZE LRECL
```

REPORT VCAT/VTOC is used to specify the fields to appear in a customised report (Obviously the Catalogs/VTOCs have to be selected by subsequent **LISTVCAT** / **LISTVTOC** statements).

The order of the parameters in the **REPORT** list is the order in which they are displayed.

Notes

The **REPORT** fields remain in force for the rest of the run, or until reset by a subsequent **REPORT** statement.

If no parameters follow **REPORT VCAT/VTOC** the layout defaults to the standard report.

The **maximum** report width is **250** characters (Report width is **not** the same as heading width - see **PAGEWIDTH**). If the parameters specified combine to give a report width of greater than 250, **Error 12** will occur. It should be noted that when CBLVCAT is calculating the report width from the report parameters it automatically adds a blank separator, it is this value which must not exceed 250.

Each **REPORT** parameter may be specified with a numeric value which will override the implicit column width. In this case no blank column separator is added as **CBLVCAT** assumes that this has been included in the numeric value (Therefore supplying the default values as numeric arguments will not produce the same output as if no argument is specified).

Specifying a column width greater than default will result in blanks being added to the right of the column (A useful technique to increase the gaps between columns).

Specifying a column width less than default will truncate the information for all columns except for **DSN** (No check is made for numeric or alpha-numeric fields and all truncation is made from the right). The full Data Set Name is printed and, if the length exceeds the column width, all other details follow on the next line (Unless **SORT** / **SORTD** is included as a parameter, in which case the Data Set Name will be **truncated**).

Specifying a number directly following **REPORT VCAT/VTOC** will set a left margin.

SORT

REPORT output can be sorted into ascending or descending order by specifying **SORT** or **SORTD** immediately prior to the field on which sorting is to commence. The quantity of output can be curtailed with the **STOPAFT** parameter.

MERGE

Allows the user to create a single customised report containing data from multiple Catalogs and/or VTOCs and/or VVDSs. If no **SORT** or **SORTD** parameter is supplied, **MERGE** will sort on the first **REPORT** parameter.

See [Guide to List Output](#) for examples of [Customised reports](#) and [Summary of Syntax](#) for a full list of parameters, column headings and default widths.

RKP (nn)**(REPORT VCAT)**

REPORT VCAT DSN LMAX KL RKP CFSIZE

Display the Relative Key Position for KSDS and AIX files.

The column width is 4, the format is '+nnn' and the column heading is **RKP** (**RKP** is also available as part of the combined column **KL,RKP/BLK/IMB** which forms part of the standard report).

Notes

The Relative Key Position is the displacement of the key in the record relative to position zero (i.e. RKP 10 is the eleventh byte of the record).

To display the Key length use **KL**.

S/C**(LISTVCAT OPTION)**

LC DD=CBLV01 OPTION S/C

For **VSE** systems only. If **SHR** is the current installation default, **S/C** can be used to display the column containing the local share option and primary space class (S/C), instead of the column containing the local and cross system share options (SHR). **S/C** and **SHR** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **SHR** is the default (**CBLVCSW1** bit **X'08'** is on). **S/C** can be made the default by changing this setting.

Notes

The space class field is blank when its value is zero.

S/C (nn)**(REPORT VCAT)**

REPORT VCAT DSN SORTD S/C

For **VSE** systems only, display the local share option and the primary space class.

The column width is 5, the format is '*n n*' and the the heading is **S/C**.

If CBLVCSW9 X'01' bit is on and option S/C is in effect, then the column, **S/C**, forms part of the standard report. CBLVCSW9 X'01' bit is set off by default in order to display 4-byte years in report date fields (TIMESTAMP and DEFINED).

See mutually exclusive option, **SHR** and and description of option **S/C**.

SECALLOC=nn**(LISTVCAT SUBSET)**

LC DD=CBLV01 SUBSET SECALLOC=50 * If at least 50 sec extents

Select files whose number of secondary **extents** is greater than or equal to the value specified.

Notes

Specifying **SECALLOC=0**, however, will select files which have **no** secondary extents.

In a future release, **SECALLOC** will be replaced by a more meaningful parameter.

SEV=n**(LISTVCAT SUBSET)**

LC DD=CBLI05 KEY=/TEMP SEV=2

Select files depending upon CBLVCAT's allocated **SEV**erity message level (i.e. according to their current state of tune).

Notes

The **SEV=n** subset **does not** cause tuning recommendations to be produced (See the **SEV**erity Block section in **Tuning Output**).

For a file selected at a particular severity level, **all SEV messages** relating to that file are printed.

SEVL (nn)**(REPORT VCAT)**

REPORT VCAT DSN SORTD SEVL

Display a files highest severity level and the lowest severity number at that level.

The column width is 4, the format is 'n-nn' and the column heading is **SEVL**.

Note

The **SEVL** column will be left blank if the file has no associated severity messages.

SHR**(LISTVCAT OPTION)**

LC DD=CBLV01 OPTION SHR * Override CBLVCSW1=X'08'

If **S/C** is the current installation default, **SHR** can be used to display the column containing the local (cross region) and cross system share options, instead of the column containing the local share option and primary space class (S/C). **S/C** and **SHR** are mutually exclusive options.

In the CBL supplied version of **CBLNAME**, **SHR** is the default (**CBLVCSW1** bit **X'08'** is on). **S/C** can be made the default by changing this setting.

Notes

If **Share Option 4** is being used, CBLVCAT flags this with an asterisk, as it should be avoided due to its system overheads.

VSE operating systems prior to **VSE/ESA 1.3** does not support the cross system share option.

SHR (nn)**(REPORT VCAT)**

REPORT VCAT DSN SORTD SHR

Display the local (cross region) and cross system share options.

The column width is 5, the format is '*n,n*' and the the heading is **SHR**.

If CBLVCSW9 X'01' bit is on and option SHR is in effect, then the column, **SHR**, forms part of the standard report. CBLVCSW9 X'01' bit is set off by default in order to display 4-byte years in report date fields (TIMESTAMP and DEFINED).

See mutually exclusive **VSE** system option, **S/C** and and description of option **SHR**.

SMS (nn)**(REPORT VCAT)**

REPORT VCAT DSN SMS

Display the System Managed Storage (SMS) **Storage Class**, **Data Class** and **Management Class** attributes for the file.

The column width is 26, the format is 'xxxxxxxx xxxxxxxx xxxxxxxx' and the column heading is **SMSS SMSD SMSM**.

SMSD (nn)**(REPORT VCAT)**

REPORT VCAT DSN SMSD SMSM SMSS

Display the System Managed Storage (SMS) **Data Class** attribute for the file.

The column width is 8, the format is 'xxxxxxx' and the column heading is **SMSD**.

SMSM (nn)**(REPORT VCAT)**

REPORT VCAT DSN SMSM SMSS SMSD

Display the System Managed Storage (SMS) **Management Class** attribute for the file.

The column width is 8, the format is 'xxxxxxx' and the column heading is **SMSM**.

SMSS (nn)**(REPORT VCAT)**

REPORT VCAT DSN SMSS SMSD SMSM

Display the System Managed Storage (SMS) **Storage Class** attribute for the file.

The column width is 8, the format is 'xxxxxxx' and the column heading is **SMSS**.

SORT=xxx**(LISTVTOC OPTION)**

LV	VOL=UCATWK1	SORT=EXT	* By absolute extent
LV	DEV=341	SORT=DSN	* By data set name

Used to select the order that files are to be displayed in the VTOC report.

The following arguments are supported:

DATE

Files will be printed in **descending** CREATE order (The filename is used as a secondary sort field - ascending order).

DSN

Files will be printed in **ascending** filename order.

EXP

Files will be printed in **ascending** EXPIRY date order. (The filename is used as a secondary sort field and the **EXPD/NOEXPD** does not have any effect on the order).

EXT

Files are sorted by absolute extent position for each element of the file (i.e. on each **EXTENT** of that file). Additional extents will not necessarily follow immediately after the **Prime** extent, but will appear where they are located (which could even be in front of the Prime extent). EXT is the **default** sort order.

Secondary extents for multi-extent files will show the filename, the extent information, and also EXT=n in the **TYPE** column.

The **Prime** extent will have the literal 'MULTI-EXTENT' in the **INFO** column and the correct file type in the **TYPE** column.

EXTPRIME

Files will be printed after sorting by primary extent (logical file order). Additional extents will be listed under the prime extent.

SIZE

Files will be printed in **descending** order of file size.

Free space is now also sorted (if requested via **FREE** option).

FREETAB reporting will also be sorted in descending **SORT** order.

SORT**(REPORT VCAT,VTOC)**

SORTA

REPORT VCAT SORT DSN TYPE NRECS TIMESTMP

Used to sort lines of Customised report output into ascending order.

Note

One specification of **SORT** is allowed per **REPORT** command. Its position within the list of keywords (defining the columns of the report) indicates where the sort begins. The sort is actioned on all the fields following the parameter, therefore, a sort of **field** within field can be achieved by placing the desired items contiguously in the parameter list (See also the description of **STOPAFT**).

The **REPORT** fields used (including **SORT**) are the ones applicable to the last **LISTVTOC/ LISTVCAT** command (See [example 14](#) in [Guide to List Output](#)).

Where **SORT/SORTD** is not specified, the **LISTVTOC** or **LISTVCAT** report is produced in the order that entries are found in the VTOC or catalog respectively.

SORTD**(REPORT VCAT,VTOC)**

REPORT VTOC DEV=ALL SORTD BLKSIZE EXPIRES

Used to sort lines of Customised report output into descending order.

See Notes in REPORT parameter SORT.

SPANNED**(LISTVCAT SUBSET)**

LC DD=CBLV01 SUBSET SPANNED

Select files defined with the **SPANNED** attribute.

SPLIT=nn**(LISTVCAT SUBSET)**

LC DD=CBLV22 SUBSET SPLIT=20

For **KSDS** and **AIX files** only, select files which have experienced at least 1 CA split or nn CI splits (see **SPLITS** in [Additional VSAM Information](#) for a discussion on CI and CA splits).

Notes

For the standard report the number of splits are reported in the **TIMESTMP / DEFINED** column if they exceed the warning values (**CBLVCSCA** and **(CBLVCSCI)**).

For a Customised report the number of splits can be reported if either the **SPLITCI**, **SPLITCA** or **SPLITS** columns are displayed.

SPLITCA (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE SORTD SPLITCA SPLITCI

For **KSDS** and **AIX files** only, display the number of Control Area splits that have taken place since the file was defined (or re-loaded).

The column width is 5, the format is '+nnnn' and the heading is **SPLIT CA** (**SPLIT CA** also forms part of the combined **SPLITS** column). See Notes under **SPLITS**.

SPLITCI (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE SORTD SPLITCA SPLITCI

For **KSDS** and **AIX files** only, display the number of Control Interval splits that have taken place since the file was defined (or re-loaded).

The column width is 5, the format is '+nnnnn' and the heading is **SPLIT CI** (**SPLIT CI** also forms part of the combined **SPLITS** column). See Notes under **SPLITS**.

SPLITS (nn)**(REPORT VCAT)**

REPORT VCAT SORT DSN 22 TYPE ALLOC4 SPLITS

Display the number of both CI and CA splits that have taken place since the file was defined (or re-loaded).

The column width is 10, the format is '+nnnn+nnnn' and the heading is **SPLITS CI CA**.

Notes

The columns are also available separately via the **SPLITCA** and the **SPLITCI** columns.

A descending **SORT** on this field will not necessarily result in the most fragmented files appearing at the top of the report, as the primary sort is on CI splits (To sort on CA splits, specify CA and CI as separate fields).

Standard reports display the number of CI and CA splits under the **TIMESTAMP / DEFINED** column when the appropriate split threshold has been reached (**CBLVCSCA** or (**CBLVCSCI**).

See **SPLITS** in **Additional VSAM Information** for a discussion on CI and CA splits).

START (nn)**(REPORT VTOC)**

REPORT VTOC DSN 22 SORT START ALLOC USED

Display the relative start address of the file.

The column width is 8, the format is '+nnnnnnnn' (tracks for CKD blocks for FBA) and the heading is **START** (**START** also forms part of the standard report).

STOPAFT=nnn**(REPORT VCAT,VTOC)**REPORT VTOC DSN SORT ALLOC LRECL
LV VOL=CBLT03 STOPAFT=30REPORT VCAT DSN AVRL ALLOC3 NRECS
LC REF=ALL MERGE STOPAFT=40

For use with the **REPORT VCAT/VTOC SORT** parameter. It allows the user to limit the number of files to be included in the report.

Notes

STOPAFT=nnn, in conjunction with **SORT** and **MERGE**, is a useful method for reporting on the top **nnn** files of the sorted output across multiple Catalogs/VTOCs (The order of the output depends upon the position of the **SORT** parameter). However, use of **MERGE** in this context would diminish the information to **nnn** entries in total, rather than **nnn** for each catalog or VTOC (this of course could well be what is required). See **example 16** in **Guide to List Output**.

If no **SORT** or **SORTD** parameter is supplied, **MERGE** will sort on the first **REPORT** parameter. Therefore, it is not strictly necessary to code **SORT/SORTD** in the **REPORT** statement.

STOPAFT only limits the number of files at print time. All the requested information will still be collected and sorted.

STRIPED

(LISTVCAT SUBSET)

STR

LISTVCAT REF=CBL.EXT.X019991 STRIPED

For MVS, selects all data sets that have been defined with SMS STORAGECLASS having a non-zero Sustained Data Rate (SDR) value.

For VSE, subset parameter STRIPED is ignored.

SUBSET

(LISTVCAT,LISTVTOC)

LC DD=CBLV01 SUBSET TYPE=K NRECS=2000

The keyword **SUBSET** indicates that report selection sub-parameters will follow.

SUBSET sub-parameters on a **LISTVTOC/ LISTVCAT** operation allow you to restrict selection to a particular file (set of files).

Notes

The word **SUBSET** is optional as all its associated parameters are unique.

SUBSET parameters are processed as a logical **AND** (i.e. cumulative). The exceptions are **KEY** and **IGN**, which are processed as a logical **OR**.

Each **SUBSET** sub-parameter is only effective for the current **LISTVTOC/ LISTVCAT** operation.

See [Summary of Syntax](#) for a list of all **SUBSET** parameters.

SUMMARY

(LISTVCAT)

LC DD=CAT006 SUMMARY

Used to suppress the detail report and generate only the Catalog summary and the self-defining Catalog entry.

Notes

If the **SUMMARY** parameter is not specified, the Catalog summary is included automatically after the main detail report (unless the selection criteria result in no files reported). **SUMMARY** cannot be used in conjunction with **TUNE** or **SUBSET**.

The columns of the summary comprise as follows:

VOLUME

The volume serial number (The catalog owns the space on this volume which the rest of the line describes).

CRA

For **VSAM Catalogs only**, the catalog recovery area (For non-recoverable catalogs this will contain 'NO' and for recoverable catalogs, the CI number of the recovery area).

TYPE

The disk device type of the associated volume (**MVS** virtual disks on Mass Storage Systems will be shown with a **V** suffix e.g. 3380V).

MIN-CA

The range of MINimum Control Area sizes (bytes for CKD, blocks for FBA).

For FBA devices there is only one value displayed, whereas for CKD devices, the range shows the upper and lower limits that may be achieved depending upon the physical record size chosen by VSAM (but not necessarily in the level of the Operating System on which CBLVCAT is running).

MAX-CA

The range of MAXimum control area sizes (bytes for CKD, blocks for FBA).

For FBA devices there is only one value displayed, whereas for CKD devices, the range shows the upper and lower limits that may be achieved depending upon the physical record size chosen by VSAM (but not necessarily in the level of the Operating System on which CBLVCAT is running).

DATA SETS

A count of the number of data sets belonging to this catalog on the volume (excluding the catalog itself).

Alternate Index (AIX) files, and Key Sequence Data Set (KSDS) files are comprised of an index component and a data component, both are included in this value.

When a file is defined on multiple volumes, each file occurrence will be included in that volume's total.

Files which are defined and have space allocated, but are empty, are also counted.

SPACE CLASS

For **VSE** VSAM catalogs only, shows the space class (Each different space class residing on a volume has a line of detail printed from this field onwards).

DATA SPACES

The number of VSAM data space areas on this volume (This item does not apply to ICF catalogs). For **VSE** each different space class has a separate entry.

TRACKS or BLOCKS

There are five sub-columns under this group column heading:

ALLOC

The number of tracks (CKD) or blocks (FBA) allocated to this space on this volume.

USED

The total number of tracks/blocks allocated to data sets in this space on this volume (This value should match that of the '**TOTAL ALLOC**' column total of the detail report).

PCNT

The total number of tracks/blocks allocated to data sets in this space on this volume. The percentage of total space available occupied by data sets (It represents the number of records in the file compared with the capacity of the **current total allocation**). For **KSDS** files, the space free is fully usable only if all the future inserts have **keys** that are evenly spread throughout the file.

When the value under this column has two asterisks on either side (see [example 3](#) in [Guide to List Output](#)), it is an indication that the **VOLUME PERCENT WARNING** threshold has been reached (This threshold value, 85% by default, may be changed using **CBLVCPCV** either at run-time or in **CBLNAME**).

FREE

The number of tracks (or blocks) remaining in the data space (space available to expand existing files or allocate new ones).

VSE users can also use this value to see if enough space remains for temporary work files (see **NOALLOC** below).

MAXF

Displays the largest contiguous free extent available per 'space class'.

This field is intended to assist with planning the location of medium to large files. It will not always be exact and in some cases can be up to 14 tracks too small.

TRACKS USED

The number of tracks on the volume taken up by files controlled by the catalog (ICF only). This is the only allocation information in an ICF summary.

TIMESTAMP

The date when a VSAM data space was last added to or deleted from the volume (format is **ccyy/mm/dd hh.mm.ss**). This value does not apply to ICF catalogs.

NOALLOC=nnn

The date when a VSAM data space was last added to or deleted from the volume. For **VSE** systems only. The total space which will be required by temporary WORK files. This non-standard report line appears beneath and to the right of the **FREE** sub-column item.

Work files are only allocated when they are required, and the space they need is taken from the unused pool.

It is unusual for all temporary files to be opened at the same time.

The **NOALLOC** value is the sum of the primary allocation for all **TEMP** files in the detail report.

SUMMARY

(LISTVTOC)

LV VOL=CBLT03 SUMMARY

For the **Standard report only**, used to suppress the detail VTOC report and generate only the VTOC summary.

Notes

If the **SUMMARY** parameter is not specified, the VTOC summary is automatically included, after the main files report, in the **INFO** column (at the same time as the freespace if **FREETAB** is active). However, the **SUMMARY** is not printed for **SUBSET** runs.

If the **SUMMARY** parameter is used, the "OLDEST" and "LATEST" fields will be missing from the **SUMMARY**.

Only the **SORT** and **DEV=ALL** sub-parameters may be used with **SUMMARY**.

SYS=ALL

(LISTVTOC)

LV	EJ=YES	* New page for each report
	SYS=ALL	* All assigned drives

For **VSE** systems only, produces a VTOC report for every disk drive that has a current assignment in the range SYS000 - SYS254.

To obtain VTOC listings of **all** active disk drives use **DEV=ALL**.

Notes

Devices which are not READY (online) are not included in the report.

SYS=nnn

(DEL,LISTVTOC,MOD)

DEL SYS=04	* Choose device (requires ASSGN SYS004....)
DEV=152	* Check assignment
DSN=ABC.PROD.FILE	* No quotes required
FAIL=EOJ	* If assignment wrong etc

For **VSE** systems only, the **DEV** and/or **SYS** and/or **VOL** parameters determine the current volume.

When a combination of two or more of these parameters is specified, the order of checks for conformance are as follows:

DEV and SYS

The assignment specified by **SYS** must match the cuu specified by **DEV** otherwise **ERROR 28** is incurred.

DEV and VOL

The volser specified by **VOL** must match the volume mounted on the cuu specified by **DEV** otherwise the OPERATOR is prompted to mount the correct volume.

SYS and VOL

The volser specified by **VOL** must match the volume mounted on the DASD assigned to by **SYS** otherwise the OPERATOR is prompted to mount the correct volume.

If a check fails then the operation will fail, with subsequent processing depending on the **FAIL** parameter.

Notes

If **DEV**, **SYS** and **VOL** are omitted, the drive will be that last used or will default to **SYS=0** if no previous device specified.

Within a single invocation of CBLVCAT, a second or subsequent **LISTVTOC** operation on the same volume(s) will benefit from significant run-time improvements, as it uses previously stored information.

See also the **OWN** parameter for checking that the correct volume is mounted.

TIMESTMP

(LISTVCAT OPTION)

TIMESTAMP

```
LC DD=CBLV01 OPTION TIMESTMP SUBSET LODATE=93
```

If **DEFINED** is the current installation default, **TIMESTMP** can be used to display the date the file was last closed by an operation that may have changed its contents, instead of the definition date. (**TIMESTMP** and **DEFINED** are mutually exclusive options).

In the CBL supplied version of CBLNAME, **TIMESTMP** is the default (**CBLVCSW1** bit X'02' is on). **DEFINED** can be made default by changing this switch.

```

/-----
\ TRACKS  ---- FRSP  LMAX  KL,RKP  CISIZE  BUFSP  CI/CA  Timestmp
/ RIME  SEC  CI  CA  ---- /BLK/IMB  ---- /IXL  ----
\
/ C=4  C=2  32400V 45,9  4096 SPANNED  116  2005/11/25
\          1  4089 --IMB-- 4096  4  ** 017 CI SPLITS**
/ 3350
/ C=2  C=2  4089V 28,4  4096 10240 120  2005/11/25
\          1  2041 2048 8  2008/09/12 09.14.11
/          1  2041 2048 8  ** 001 CI SPLITS**
\
/-----

```

Example: LISTVCAT TIMESTMP field (CBL Ref: vmxtime)

Note

This OPTION also governs the date that will be used in a **HIDATE**, **LODATE** SUBSET.

TIMESTMP (nn)

(REPORT VCAT)

REPORT VCAT DSN 22 TYPE NRECS SORTD TIMESTMP DEFINED

Display the date that the component was last closed (after being opened for operations that might have changed its contents).

The column width is 20 and the heading is **TIMESTMP** (**TIMESTMP** also forms part of the standard report if the option **TIMESTMP / DEFINED** is set to **TIMESTMP**).

Where included as part of the LISTVCAT **standard** report, TIMESTMP has the format '*ccyy/mm/dd hh.mm.ss'. However, if specified on REPORT as part of a **customised** report, then the format is 'ccyy/mm/dd hh.mm.ss*' with '*' (asterisk) following the date as opposed to preceding it. This is so that SORT on the TIMESTMP field is reliable.

Notes

If the file has been defined but not loaded, there is no timestamp. In this case CBLVCAT reports the DEFINED date (This is in **ccyy/mm/dd** format and is therefore easily recognisable). However, if a file is defined, loaded with one record, and then that record is deleted (making the file empty), the full timestamp is shown.

The timestamp is held as an absolute value to GMT (Greenwich Mean Time). Users on other time zones may set CBLVCSW9=X'02' (CBLNAME option VTZAdjust=Yes) to adjust the time and date to the local time zone.

If CBLVCSW9=X'01' is set on (CBLNAME option V2digitYear=Yes) then the format of the TIMESTMP field is '*yy/mm/dd hh.mm' or 'yy/mm/dd hh.mm*' for standard or customised reports respectively. Note that this option will also include report field **SHR** or **S/C** as part of the standard report.

*ccyy/mm/dd hh.mm.ss

An asterisk eye-catcher preceding the time stamp value (or following it in a customised report) indicates that the KSDS index is out of step with its data component (possibly caused by file corruption, or a program processing and updating the index or data components separately).

The timestamp value may not be accurate if the file being reported is currently in use by another program, as it is not updated until file closure.

'***nnn CI SPLITS**' and '***nnn CA SPLITS**'

Non-standard lines appearing in the Standard report if the appropriate splits threshold has been reached (**CBLVCSCA** or **CBLVCSCI**).

TOTALLOC=nnn

(LISTVCAT SUBSET)

```

LC      DD=CBLV03
SUBSET TOTALLOC=400  SECALLOC=10  * If at least 400 trks and 10 sec extents.
LC      DD=CBLV01
SUBSET TOTALLOC=0    * List temp files

```

Select files with a total allocation greater than or equal to the value specified (tracks for CKD, blocks for FBA).

Note

VSE users may specify **TOTALLOC=0**, in order to obtain a report of dynamic files defined with the IDCAMS attributes **NOALLOCATION** and **REUSE** (They are normally used as compiler work files). These files appear on the report with "**TEMP**" in the **TOTAL** column. Space is allocated when they are initially opened for output and deleted once they are closed (depending on the ACB or JCL options).

TOTALS**(LISTVCAT,LISTVTOC OPTION)**

```

LC      DD=CBLI04    KEY=ABC  KEY=ABE  TOTALS
LC      DD=CBLV03    NRECS=0   TOTALS    * Empty files

```

Display only the totals for the datasets selected by suppressing the reporting of individual datasets.

```

| SPACE ALLOCATED TO TEST FILES ON CBLV03 AND CBLV04  2009/08/19  PAGE    1  |
| o -----|
| REPORT   VCAT   ALLOCT ALLOCP ALLOCS CISIZE |
| o LISTVCAT DD=CBLV03  KEY=TEST  TOTALS  MERGE |
|   HEAD='SPACE ALLOCATED TO TEST FILES ON CBLV03 AND CBLV04' |
| o LISTVCAT DD=CBLV04  KEY=TEST  TOTALS |
| o |
| ALLOC    ALLOC    ALLOC    CISIZE |
| o TOTAL   PRIME    SEC    -----|
| 130244   73619    2638 |
| o CBLVCAT IS LICENSED BY COMPUTE (BRIDGEND) LTD 0656-652222, 0656-656466 |
|   ** EXPIRY DATE --- 6 JUN 1995 ** |

```

Example: TOTALS (CBL Ref: vbvx5f3)

Notes

TOTALS can be applied to Standard or Customised Reports. The columns to which it applies are: **ALLOCT**, **ALLOCP**, **ALLOCS**, **ALLOCU**, **SPLITCA**, **SPLITCI** and **ALLOC**.

All other specified report items (e.g. **CISIZE**) are left blank, however, the column headings are still printed.

When used with **MERGE**, the user is able to obtain totals across multiple catalogs without reporting on the individual catalog detail (The **HEAD='string'** parameter enables the user to give this type of report a descriptive heading).

TUNE (sys)**(LISTVCAT)**

```

LC      DD=CBLV01    KEY=PROD.WRK1  TUNE  DEFINE
LC      DD=CBLV22    TUNE=MVS

```

Select files with a total allocation greater than or equal to the value specified (tracks for CKD, blocks for FBA).

The **TUNE** parameter will cause tuning recommendations to be added to the report and, if **DEFINE** is specified, the IDCAMS **DEFINE** output.

TUNE without a **sys** argument tunes for the current operating system. If a **sys** argument is used, tuning recommendations are based upon that argument.

Notes

TUNE is only active for the operation on which it is specified.

For **CMS** users, if no **sys** argument is used, tuning recommendations will be for the **MVS** operating system (unless DOS is set ON when they will be for **VSE**). The title page of the Detail Report identifies the system in effect.

Allowable **sys** arguments are **MVS** and **VSE**.

When no **TUNE** sub-parameters are specified, unrestricted tuning recommendations will be given. However, if run-time overrides are supplied (e.g. **RECORDS=nnn**), the tuning recommendations will reflect these overrides (unless they are unreasonable).

Files that do not require tuning are shown as **'FILE ALREADY IN TUNE'**. A file that is already in tune might have **SEV 1-nn** messages indicating fine tuning conditions.

See [Guide to VSAM Tuning](#) for further details and examples.

TYPE (nn)**(REPORT VTOC)**

REPORT VTOC DSN 18 USED SORT ALLOC TYPE RECFM LRECL BLKSIZE

Display the file type (e.g. DA, PDS, VSAM etc).

The column width is 7, the format is 'xxxx' or '*EXT=n' and the column heading is **TYPE** (**TYPE** also forms part of the standard report).

Notes

Possible entries in this column are as follows:

(blanks)	The field is left blank for sequential (SD) files that do not occupy split extents.
U	A sequential file (PS) has been defined as unmovable (In VSE systems the file has been created using a DLBL of IJSYSxx).
nnnn	For CKD disks only, indicates the volume device type, e.g, 3380, 3390.
DA	The file was created using the Direct Access method.
DAU	A direct access file (DA) has been defined as unmovable .
EXT=n	The extent number of a multi-extent file.
EXT=n	The extent with the lower extent number has not been processed (possibly on another volume). This will not be given when the report is listed by absolute extent (i.e. SORT=EXT).
FBA	Indicates that the device is of Fixed Block Architecture.
PDS	The file is a Partitioned Data Set.
PDSE	The file is a Partitioned Data Set Extended.
PDU	The Partitioned Dataset (PD) has been defined as unmovable .
SPLIT	A sequential file occupying a Split cylinder.
VSAM	The file is a VSAM data space.

TYPE (nn)**(REPORT VCAT)**

REPORT VCAT DSN 22 TYPE NRECS SORTD TIMESTMP DEFINED

Display the file type (e.g. KSDS, NONVSAM, SAM etc).

The column width is 8 and the column heading is **TYPE** (**TYPE** also forms part of the standard report).

Notes

If **CBLVCSW9** bit **X'10'** is OFF and the file entry is a VSAM cluster defined with MVS SMS attribute "Extended Addressability" or VSE IDCAMS DEFINE parameter EXTRALARGEDATASET, then the 4th character of file type is overwritten with an "X". i.e. KSDS becomes KSDX, ESDS becomes ESDX, etc.
In the CBL supplied version of CBLNAME **CBLVCSW9** bit **X'10'** is OFF.

Possible entries in this column are as follows:

AIX	An Alternate Index (This will be followed by an index (IX) line and possible association details). The key position applies to its location in the associated KSDS.
(G)	An Alternate Index Dataset defined with the UPGRADE attribute.
(Q)	An Alternate Index Dataset defined with the UNIQUEKEY attribute.
(QG)	An Alternate Index Dataset defined with the UPGRADE and UNIQUEKEY attributes.
ALIAS	For a Customised report the alias name will be displayed. However, for a Standard report the name of the referenced file is also shown (the alias will also be shown with other aliases against the NONVSAM, USERCAT or ICFCAT file entry - see ALIAS for an example). Alias detail lines can be suppressed (see NOALIAS).
ESDS	An Entry Sequenced Data Set.
GDG	<p>A Generation Data Group. For the standard report only, the base name, the maximum number of generations, the version and generation numbers of associated NONVSAM files together with disk and device type, or tape sequence number, are also shown (see below). Access to this information in a Customised report is via the VOLn fields.</p> <pre> TYPE NRECS PCNT ---- ALLOC TRACKS ---- FRSP LMAX KL,RKP CISIZE BUFS\ ---- ----- --- TOTAL PRIME SEC CI CA ---- /BLK/IMB ----- /IXL/ GDG MAXLVL=3 G=NONE GDG MAXLVL=3 G=NONE GDG MAXLVL=3 G=NONE GDG MAXLVL=25 V17=0529 (VOL1=000017,TAPE VOL2=000118,TAPE VOL3=000126,TA VOL4=000144,TAPE VOL5=000152,TAPE VOL6=000159,TA VOL7=000036,TAPE VOL8=000205,TAPE VOL9=000039,TA V010=000237,TAPE V011=000247,TAPE V012=000040,TA V013=000044,TAPE V014=000339,TAPE V015=000066,TA V016=000103,TAPE V017=000452,TAPE V018=000104,TA \\\\/\\\\\\//_ </pre> <p>Example: TYPE GDG details (CBL Ref: vmxgddt)</p>
ICFCAT	An ICF connector record. For a Standard report the volume and aliases of ICF catalogs linked to this catalog are also shown.
IX	The Index component of an AIX, KSDS or VRDS file. For a VVDS report the data structure is also displayed. (i.e. KSDS, VRDS or AIX).
KSDS	The Data component of a Key Sequenced Data Set (This line will be followed by an index (IX) line which describes the INDEX component and, possibly, association detail lines).
(R)	A reusable file (When it is opened for output it will effectively become a new file).
LDS	A LINEAR DATA SET.
NONVSAM	MVS files that do not occupy space within the catalog. For a standard report volume details (if not on the catalog volume) and any associated aliases are also shown. Details are not printed here for files that form part of a GDG.
PAGESP	OS system page space (similar to ESDS lines).
RRDS	A Relative Record Data Set.
SAM	For VSE only, a Sequential Access Method file managed by VSAM (This is similar to ESDS except that BLKSIZE contains the blocksize of the SAM file).
USERCAT	A User catalog. For the standard report the volume and aliases of VSAM catalogs linked to this master catalog are also shown. (When the User Catalog resides on an emulated disk, the device type is suffixed with a V, e.g. USERCAT VOL1=CBLV0X 9335V).
VRDS	The Data component of a Variable-length Relative Record Data Set. This line will be followed by an index (IX) line which describes the INDEX component

TYPE=xxx

(LISTVCAT SUBSET)

TY

```
LC      DD=UCAT1
        SUBSET TYPE=AC          * Select AIX and Clusters.
LC      DD=UCAT2
        SUBSET TYPE=ACNUX       * Select all except GDG.
```

Select files based on their type.

Notes

Any combination of the following types is allowed:

A	Alternate Index file	AIX	
C	Cluster (the same as EKLPRSV)		
E	Entry Sequenced Data Set	ESDS	
G	Generation Data Group	GDG	(MVS only)
K	Key Sequenced Data Set	KSDS	
L	Linear Data Set	LDS	(MVS only)
M	VSAM (the same as AEKRV)		
N	Non-VSAM file.	NONVSAM	(MVS only)
P	PAGE Data SSpace	PAGESP	(MVS only)
R	Relative Record Data Set	RRDS	
S	SAM files managed by VSAM	SAM	(VSE only)
U	User catalog	USERCAT/ICFCAT	
V	Variable Length Relative Record Data Set	VRDS	
X	Alias	ALIAS OF	(MVS only)

TYPE=xxx**(LISTVTOC SUBSET)****TY**

```

LV      VOL=CBLT01
SUBSET  TYPE=DIPS      * Select all except VSAM

```

Select files based on their type.

Notes

Any combination of the following types is allowed:

D	Direct Access files	DA	
I	ISAM files	PRIME/INDEX/OFLOW	
P	Partitioned Data Sets (PDS and PDSE)	PDS	(MVS only)
P1	Partitioned Data Sets (PDS only)	PDS	(MVS only)
P2	Partitioned Data Sets (PDSE only)	PDS	(MVS only)
S	Sequential files	(left blank)	
V	Virtual Storage Access Method	VSAM	

UNALLOC=nnn**(LISTVCAT SUBSET)**

```

LC      DD=CBLV01
SUBSET  UNALLOC=15      * If at least 15 blks/trks

```

Select files whose **unused allocation** is greater than or equal to the specified value (tracks CKD, blocks FBA).

Notes

Once a control area contains at least one record it is considered allocated, therefore **UNALLOC=0** selects files which have at least one record in all of its control areas.

A comparison of unallocated space before and after a reload with no change of definition can show an increase in unallocated space (i.e. Distributed freespace can be recovered as unallocated space).

UNIT (nn) - REPORT VTOC**(REPORT VTOC)**

```

REPORT VTOC    VOLUME    SORT UNIT    DSN    CREATED  ACCESSED  EXPIRES

```

Display the device channel and unit (cuu) of the volume being processed.

Example: VTOC Report with REPORT field UNIT (CBL Ref: vytunit)

UNUSED (LISTVCAT OPTION)

USED (nn) (REPORT VTOC)

128

Non-ISAM files will only have an entry if the installation has software to update the 'last record' field in the format 1 label in the VTOC.

VCAT (nn)

(REPORT)

REPORT VCAT 6 DSN 22 TYPE NRECS SORTD Timestmp DEFINED

Valid on the **REPORT** operation only, it indicates that the subsequent parameters describe the columns of a customised Catalog Report.

Notes

Supplying "**nn**" sets the left margin at column '**nn**', otherwise the margin defaults to column 0.

Resetting to the standard report may be achieved by supplying **REPORT VCAT** without additional parameters.

See also **REPORT**.

VOL=volser

(LISTVCAT SUBSET)

LC DD=CBLV03 NRECS=0 VOL=CBL222

Select files which reference the specified volume.

Notes

If a file references more than one volume, all the other volume lines will be printed.

Specifying **CBLVCEXT=n** (n non-zero) will show the physical address of each extent used on the volume.

VOL=volser

(DEL,MOD)

MOD DEV=105 * VSE, choose device
VOL=PROJ03 * Check volume
NEWVOL=PRJ003 * Change volume serial number

For **VSE** systems only, used to select or verify the required volume.

Notes

The **disk volume label** may be modified via **MOD NEWVOL=xxx**. However, in this instance, **VOL** is used only as a check that the correct disk has been selected. i.e. a **DEV** and/or **SYS** parameter must also be coded.

WARNING - Take great care when modifying disk volume serial numbers.

See also **DEL** and **MOD**.

VOL=volser/vol*

(LISTVTOC)

LV VOL=anyvol * Select one volume.
LV VOL=vol* * Generic volume selection.

Selects the required VTOC by direct reference to the volume serial number.

Notes

For **MVS** and **VSE** systems, The **VOL=vol*** syntax produces a separate VTOC report for every volume which has a generic name match (**VOL=vol*** in conjunction with **MERGE** would combine the separate reports into a single listing).

VOL=* is exactly the same as **DEV=ALL**

For **MVS** and **VSE** systems, Within a single invocation of CBLVCAT, a second or subsequent **LISTVTOC** operation on the same volume(s) will benefit from significant run-time improvements, as it uses previously stored information.

For **VSE** systems only, the **DEV** and/or **SYS** and/or **VOL** parameters determine the current volume.

When a combination of two or more of these parameters is specified, the order of checks for conformance are as follows:

DEV and SYS

The assignment specified by **SYS** must match the cuu specified by **DEV** otherwise **ERROR 28** is incurred.

DEV and VOL

The volser specified by **VOL** must match the volume mounted on the cuu specified by **DEV** otherwise the OPERATOR is prompted to mount the correct volume.

SYS and VOL

The volser specified by **VOL** must match the volume mounted on the DASD assigned to by **SYS** otherwise the OPERATOR is prompted to mount the correct volume.

If a check fails then the operation will fail, with subsequent processing depending on the **FAIL** parameter.

If **DEV**, **SYS** and **VOL** are omitted, the drive will be that last used or will default to **SYS=0** if no previous device specified.

See also the **OWN** parameter for checking that the correct volume is mounted.

VOLINFO

(LISTVCAT OPTION)

L.C DD=CBI.T03 NOINDEX VOLINFO

If **NOVOL** is the current installation default, **VOLINFO** can be used to display the volume information lines (**VOLINFO** and **NOVOL** are mutually exclusive options).

In the CBL supplied version of CBLNAME, **VOLINFO** is the default (**CBLVCSW1** bit **X'10'** is on). **NOVOL** can be made default by changing this switch.

```

      LISTVCAT  DD=CBLV04  KEY=TSTX  NOASSOC  VOLINFO
O
O  USERCAT  CBLV04  (3380)  TYPE          NRECS  PCNT  ----  ALLOC  TRACKS  ----  FRSP
O  -----  -----  ----  -----  ----  TOTAL  PRIME  SEC  CI  CA
O  TSTX.ASSOC.TRANS.XREF  KSDS  1023780  61.5  C=150  C=120  C=10  30 10
O
O                                CANDIDATE VOL1=CBLV04
O                                CANDIDATE VOL2=CBLV32
O                                IX  153  68.0  5  5  1
O                                VOL1=CBLV04
O                                CANDIDATE VOL2=CBLV32
O
O                                ----  ----  ----
O                                2255  1805  151
O                                ----  ----  ----
O
O                                ** ** ** ** ** ** ** ** ** ** ** ** ** CBLVCAT 2.12.156  Licensed by Compute (Bridgend)
O                                ** Expiry: 2010-07-20 **

```

Example: LISTVCAT volume details (CBL Ref: vmxvoln)

Note

Specifying **CBLVCEXT=n** will force **VOLINFO**

'VOLn=volser', relates to the preceding file detail line. It appears when a file resides on more than one volume (or a volume other than the catalog volume).

'CANDIDATE', the file is eligible to be expanded onto this volume or another volume, but has not grown sufficiently to do so.

'**OVERFLOW**', the file is using a volume that was not originally specified in the define (for files defined with the **KEYRANGE** attribute).

VOL1 (nn)

(REPORT VCAT)

REPORT VCAT SORTD TIMESTAMP VOL1 50

Display the volume serial number of non-VSAM files.

The column width is 6, the format is 'nnnnnn' and the heading is **VOLSER**.

```

REPORT VCAT DSN 30 VOL1 80
o
LISTVCAT DDNAME=CBLI01
          TYPE=G GDGDSN * GDGDSN option
o
ICF CAT CBLI01 (3350) VOLSER ...
o -----
TEST.COP.ADF
o TEST.COP.AIF
TEST.COP.CIF
Z.EXAMPLE.GDG.G0529V17 000017 000118 000126 000144 000152 000159 000036
o 000040 000044 000339 000066 000103 000452 000104
000233 000343 000500 000505 000471 000472 000444
000446 000608 000511 000513 000515 000516 000451
o Z.EXAMPLE.GDG.G0530V18 000018 000354 000356 000107 000175 000392 000203
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: REPORT VCAT VOL1 (CBL Ref: vmxvol1)

Notes

Specifying a larger field width than the default value (which is one serial number per line) will allow as many serial numbers as possible to appear on a line within the given field width. Any remaining are carried over onto subsequent lines.

VOL2 (nn)

(REPORT VCAT)

REPORT VCAT DSN 30 VOL2 90

Display the volume serial number and device type for non-VSAM files.

The column width is 15, the format is 'nnnnnn xxxxxxxx' and the heading is **VOLSER DEVICE**.

```

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales 2009/08/19 PAGE 1
o -----
REPORT VCAT GGEN GVER VOL2 35 GMAX
o
LISTCAT DDNAME=CBLI01
        TYPE=G
o
GEN VER VOLSER DEVICE ... GMAX
o --- ---
o
o
o
o 529 17 000017 TAPE 000118 TAPE 25
o 000126 TAPE 000144 TAPE
o 000152 TAPE 000159 TAPE
o 000036 TAPE 000205 TAPE
o 000039 TAPE 000237 TAPE
o 000247 TAPE 000040 TAPE
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: REPORT VCAT VOL2 (CBL Ref: vmxvol2)

Notes

Specifying a larger field width than the default value (which is one data item per line) will allow as many combinations as possible to appear on a line within the given field width. Any remaining are carried over onto subsequent lines.

If the device is a tape unit, **'TAPE'** will be displayed for the device type.

If **CBLVCSW9** bit **X'08'** is ON, the DEVICE column displays devices in their internal hexadecimal notation. In the CBL supplied version of CBLNAME **CBLVCSW9** bit **X'08'** is OFF.

VOL3 (nn)

(REPORT VCAT)

REPORT VCAT DSN 30 CATALOG VOL3 45

Display the sequence number and volume serial number for non-VSAM files.

The column width is 10, the format is 'nnn nnnnnn' and the heading is **SEQ VOLSER**.

```

REPORT VCAT DSN 22 TYPE GMAX GGEN GVER VOL3 25
o
LISTVCAT DDNAME=CBLI01
          TYPE=G GDGRPT * Repeat option
o
ICF CAT CBLI01 (3350) TYPE GMAX GEN VER SEQ VOLSER ...
o
TEST.COP.ADF GDG 3
o TEST.COP.AIF GDG 3
TEST.COP.CIF GDG 3
Z.EXAMPLE.GDG GDG 25 529 17 1 000017 2 000118
o Z.EXAMPLE.GDG GDG 25 529 17 3 000126 4 000144
Z.EXAMPLE.GDG GDG 25 529 17 5 000152 6 000159
Z.EXAMPLE.GDG GDG 25 529 17 7 000036 8 000205
o Z.EXAMPLE.GDG GDG 25 529 17 9 000039 10 000237
Z.EXAMPLE.GDG GDG 25 529 17 11 000247 12 000040
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: REPORT VCAT VOL3 (CBL Ref: vmxvol3)

Notes

Specifying a larger field width than the default value (which is one data item per line) will allow as many combinations as possible to appear on a line within the given field width. Any remaining are carried over onto subsequent lines.

VOL4 (nn)

(REPORT VCAT)

REPORT VCAT DSN 30 VOL4 50

Display the sequence number, volume serial number and device type for non-VSAM files.

The column width is 19, the format is 'nnn nnnnnn xxxxxxxx' and the heading is **SEQ VOLSER DEVICE**.

```

REPORT VCAT DSN 22 TYPE GMAX GGEN GVER VOL4
o
LISTVCAT DDNAME=CBLI01
          TYPE=G
o
ICF CAT CBLI01 (3350) TYPE GMAX GEN VER SEQ VOLSER DEVICE ...
o
TEST.COP.ADF GDG 3
o TEST.COP.AIF GDG 3
TEST.COP.CIF GDG 3
Z.EXAMPLE.GDG GDG 25 529 17 1 000017 TAPE
o
2 000118 TAPE
3 000126 TAPE
4 000144 TAPE
o
5 000152 TAPE
6 000159 TAPE
7 000036 TAPE
o
8 000205 TAPE
/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/\/

```

Example: REPORT VCAT VOL4 (CBL Ref: vmxvol4)

Notes

Specifying a larger field width than the default value (which is one data item per line) will allow as many combinations as possible to appear on a line within the given field width. Any remaining are carried over onto subsequent lines.

If the device is a tape unit, **'TAPE'** will be displayed for the device type.

If **CBLVCSW9** bit **X'08'** is ON, the DEVICE column displays devices in their internal hexadecimal notation. In the CBL supplied version of CBLNAME **CBLVCSW9** bit **X'08'** is OFF.

VOL5 (nn)

(REPORT VCAT)

REPORT VCAT DSN 30 VOL5 50

Display the sequence number, volume serial number, device type and file sequence number of non-VSAM files.

The column width is 23, the format is 'nnn nnnnnn xxxxxxxx nnn' and the column heading is **SEQ VOLSER DEVICE FSEQ**.

```

REPORT VCAT DSN 22 TYPE GMAX GGEN GVER VOL5

LISTVCAT      DDNAME=CBLI06
               TYPE=G

ICF CAT CBLI06 (3380) TYPE      GMAX  GEN  VER  SEQ  VOLSER  DEVICE  FSEQ ..
-----
ABCD.DCI.DBKP1      GDG          2    12    0    1 000681 TAPE    001
ABCD.GL.DBKP1       GDG          5    32    0    1 000758 TAPE    001
                   33    0    1 000171 TAPE    001
                   34    0    1 001360 TAPE    001
                   35    0    1 001022 TAPE    001
                   36    0    1 000334 TAPE    001

```

Example: REPORT VCAT VOL5 (CBL Ref: vmxvol5)

Notes

Specifying a larger field width than the default value (which is one data item per line) will allow as many combinations as possible to appear on a line within the given field width. Any remaining are carried over onto subsequent lines.

If the device is a tape unit, **'TAPE'** will be displayed for the device type.

If **CBLVCSW9** bit **X'08** is ON, the DEVICE column displays devices in their internal hexadecimal notation. In the CBL supplied version of CBLNAME **CBLVCSW9** bit **X'08** is OFF.

VOLUME (nn)

(REPORT VCAT,VTOC)

REPORT VTOC VOLUME 8 DSN 18 SORTD ALLOC LRECL RECFM
LC DD=CBLI11

Display the volume serial number of the catalog volume (for **LISTVCAT DDNAME**), the VVDS volume (for **LISTVCAT VVDS**), or the VTOC volume (for **LISTVTOC**).

The column width is 6, and the column heading is 'VOLUME'.

Notes

VOLUME is designed for multiple operation runs, where post processing is much easier if there is a volume reference on each file line.

VTOC (nn)

(REPORT)

REPORT VTOC DSN 18 SORTD ALLOC BLKSIZE LRECL RECFM

Valid on the **REPORT** operation only, it indicates that the subsequent parameters describe the columns of a customised VTOC Report.

Notes

Supplying **"nn"** sets the left margin at column **'nn'**, otherwise the margin defaults to column 0.

Resetting to the standard report may be achieved by supplying **REPORT VTOC** without additional parameters.

See also **REPORT.**

VVDS=volser

(LISTVCAT)

```
LC      VVDS=CB9009
LC      VVDS=CB9123      KEY=TEST
```

List the catalog entries for an **ICF VVDS** (VSAM Volume Data Set).

CBLVCAT REL 2.12 AT COMPUTE (Bridgend) Ltd - Wales										(OS)	VM/CMS=VMNB		22.15 WED 19 AUG 2009			PAGE	1
LISTVCAT VVDS=CBLI04																	
VVDS	CBLI04	TYPE	NRECS	PCNT	----	ALLOC	TRACKS	----	FRSP	LMAX	KL,RKP	CISIZE	BUFSP	CI/CA	TIMESTAMP		
						TOTAL	PRIME	SEC	CI CA		/BLK/IMB		/IXL				
SYS1.VVDS.VCBLI04		ESDS	30+**	ALL**		3	3	2		4089		4096	0	10			
CICS161.SVSTCICS.CSD		KSDS	414	10.3		9	9	0*		200V	22,0	22528	45568	18	2006/04/24 24.43.40		
CICS161.SVSTCICS.CSD		KSDS IX	1	2.2		1	1	0*		505		512		46	** 001 CI SPLITS**		
CICS161.SVSTCICS.DFHTEMP		ESDS	300+**	ALL**		C=2	C=2	C=0*		4089		4096	8192	150	2005/08/13 12.33.45		
CICS161.SVSTCICS.FILEA		KSDS	45	8.1		1	1	0*		80	6,1	22528	45568	2	2005/08/13 12.33.45		
CICS161.SVSTCICS.FILEA		KSDS IX	1	2.2		1	1	0*		505		512		46			
CICS161.SVSTCICS.DFHINTRA		ESDS	100+**	FULL**		10	10	0*		4089		4096	8192	100	2005/08/13 12.33.45		
ICFCAT.CBLI04		KSDS IX	19+**	95.0**		1	1	1		2041	--IMB--	2048		18			
TMON.TESTTMXS.TMGTO1		KSDS	534	50.9		C=3	C=1	C=1	10*10	8185V	25,0	8192	17408	70	2005/08/13 12.16.25		
TMON.TESTTMXS.TMGTO1		KSDS IX	4	** ALL**		1	1	1		1017	IMB+REP	1024	IXL=2	31			
ICFCAT.CBLI04		KSDS	47+	50.0		14	14	7	10 10	32400V	45,9	1024	SPANNED	186	** 152 CI SPLITS**		
CICS161.SVSTCICS.TMON		RRDS (R)	150	** ALL**		C=1	C=1	C=0*		4089		4096	8192	150	2005/08/13 12.26.55		
CICS161.SVSTCICS.RSD		KSDS	27	5.4		C=1	C=1	C=1		2000V	10,0	2048	6656	252	2005/08/13 12.32.28		
CICS161.SVSTCICS.RSD		KSDS IX	1	50.0		1	1	1		2553	IMB+REP	2560		15	** 003 CI SPLITS**		
BUZZ.TESTHARN.LINEAR		LDS	281	26.8		C=7	C=7	C=7		4096		4096	8192	150			
SYS1.SVCLIB		NONVSAM	CAT=USERCAT.MVSV5R														
SYS1.SCNMLNK1		NONVSAM	CAT=USERCAT.MVSV5R														

Example: LISTVCAT VVDS=volser (CBL Ref: vbxx5f8)

Notes

The syntax and JCL requirements are the same as for the **DDNAME** parameter (except for **TUNE** and **DEFINE** which are not valid for VVDS reporting).

Parameters that request data not contained in the VVDS are ignored without generating an error (e.g. although GDG files can be requested with a **TYPE** parameter, it has no entries in the VVDS and are therefore not displayed). SMS managed volumes however, do have limited non-VSAM entry information in the VVDS and so is included in the VVDS report.

VVDS reporting is intended for problem situations (e.g. if the BCS is **corrupt** it is still possible to obtain the dataset information contained in the VVDS). For normal catalog reporting, via the BCS, see the **DDNAME** and **REF** parameters.

VVDS reporting can also be useful as part of a housekeeping operation (see examples in [Guide to VSAM Tuning](#)).

The VVDS is itself a VSAM ESDS file, so entries are **displayed** by CBLVCAT in the order they are contained in the VVDS (unless a **SORT** parameter is used on a **REPORT VCAT** command).

For KSDS and AIX files, the **DATA** and **INDEX** components are treated as separate entities (In fact, they do not have to exist in the same VVDS), consequently CBLVCAT reports the **DATA** and **INDEX** components as separate items even when both are present in the same VVDS (see above). This is in contrast to catalog reporting which reports on the cluster as a single item.

For **INDEX** components (IX), the data type (KSDS or AIX) is also displayed in the **TYPE** field.

XVSAM

(LISTVCAT SUBSET)

STR

```
LISTVCAT KEY=NBJ.EXT.Z013421 XVSAM
```

For MVS, selects only **VSAM** data sets that have been defined with SMS DATACLASS attribute DSNTYPE=EXT. (XVSAM is a synonym for EXTENDED TYPE=M).

For VSE, XVSAM is a synonym for **EXT-ADDR**.

CBLNAME

This chapter illustrates and explains the **CBLNAME** module, which is the loadable phase/module that **must be available** to CBLVCAT at every execution (it provides installation standards and defaults).

The separate "**CBLVCAT Installation Guide**" (which is supplied with the Distribution Material), gives full information on how to set up the **CBLNAME** phase/loadmodule.

Introduction

CBL products **SELCOPY** and **CBLVCAT** load the MODULE/PHASE CBLNAME at startup to establish environment options.

CBLNAME Source Code

A skeleton CBLNAME source file is included as part of the product bundle.

In earlier releases, the CBLNAME source was simply an Assembler CSECT containing DC (define constant) for each field name (e.g. CBLVCSW1) and options were set by manually coding an operand value appropriate to the particular field. e.g.

```
CBLVCSW2      DC      X'1C'          Set Options FREETAB (X'18') & NOEXPD (X'04')
```

This method has been simplified with the distribution of the CBLNAME Assembler Macro. The modern format of the CBLNAME source includes a single invocation of the CBLNAME macro with comma separated parameters representing each CBLNAME option field.

```
CBLNAME      Site='Compute (Bridgend) Ltd - Wales UK',          +
              VPassword='1234,5678,9ABC,DEF0',                  +
              VDateRange=(1975/07/11-2005/07/12),                +
              VLineSpace=1,                                       +
...

```

Throughout this manual, CBLNAME options are still referred to by their CSECT field names. However, the CBLNAME macro option format should be used to update and re-assemble CBLNAME.

CBLNAME Licensing

In early releases of CBLVCAT an expiry date was hard coded with in the CBLVCAT source code. This has been since been removed and replaced with a **password** mechanism which is based on the user's **Company name/location** and **Operational Date Range(s)** as supplied by CBL.

Note that the CBLNAME password is **not** based on CPUID.

The licence details are not dependent upon the release of the software and distributed independently of any new release of CBLVCAT. Therefore, it is possible (and encouraged) that the latest release of CBLVCAT be installed without having to apply new a password.

The user's Site string and new date range and password is distributed to all licensed users each year, before the end of the current operational date range, in order to allow continued successful execution of the software. These new licence details must replace existing licence details in the CBLNAME PHASE/MODULE.

In order to accommodate the new licence details, extensions have been added to the CBLNAME module for each CBL licensed product. Each extension has a variable length and contains fields for the products' operational date range(s) and user specific password.

These extensions are not easily inserted manually and so the CBLNAME macro should be used to avoid confusion and errors.

Please refer to the "**CBL Products Install**" documentation for comprehensive instructions on updating and maintaining CBLNAME.

Field Summary

The following table contains a summary of CBLNAME Macro parameters and arguments that apply to CBLVCAT, and their equivalent CSECT field names and offsets. Where applicable, default arguments are highlighted or enclosed in parentheses following.

CBLNAME Macro Parameter	CBLNAME CSECT		
	Field Name	Value	Offset
Site='string'	CBLHEAD	-	+X'00'
VPassword='hexstring'	-	-	-

VDateRange=(daterange,...)	-	-	-
INamDsn='fileid'	-	-	-
PageDepth=int	CBLCLINE	-	+X'38'
PageWidth=int	CBLCPW	-	+X'39'
Separator=char (!)	CBLCSEP	-	+X'3E'
VLineSpace=int (2)	CBLVCSPA	-	+X'74'
VAssoc=No Yes	CBLVCSW1	X'80'	+X'75'
VFlagImbed=No Yes	CBLVCSW1	X'40'	+X'75'
VFlagRepli=No Yes	CBLVCSW1	X'20'	+X'75'
VVolInfo=No Yes	CBLVCSW1	X'10'	+X'75'
VAlias=No Yes	CBLVCSW1	X'08'	+X'75'
VShrOrSC=SHR SC	CBLVCSW1	X'08'	+X'75'
VPCOrUnused=UNUSED PCNT	CBLVCSW1	X'04'	+X'75'
VTSoRDefined=DEFINED TS	CBLVCSW1	X'02'	+X'75'
VExcpOrCICA=CICA EXCP	CBLVCSW1	X'01'	+X'75'
VCISplits=int (1)	CBLVCSCI	-	+X'76'
VCASplits=int (1)	CBLVCSCA	-	+X'77'
VSecAlloc=int (4)	CBLVCALW	-	+X'78'
VSecAllocErr=int (10)	CBLVCALE	-	+X'79'
VFilePercent=int (85)	CBLVCPCF	-	+X'7A'
VVolsPercent=int (85)	CBLVCPCV	-	+X'7B'
VCatFileName=char (IJSYSUC)	CBLVCFN	-	+X'7C'
VVolSer=No Yes	CBLVCSW2	X'20'	+X'84'
VFreeSpace=No Yes	CBLVCSW2	X'10'	+X'84'
VFreeTab=No Yes	CBLVCSW2	X'08'	+X'84'
VExpd=No Yes	CBLVCSW2	X'04'	+X'84'
VPerm=No Yes	CBLVCSW2	X'02'	+X'84'
VMountVVDS=No Yes	CBLVCSW3	X'80'	+X'85'
VOvlay=No Yes	CBLVCSW3	X'40'	+X'85'
VIndex=No Yes	CBLVCSW3	X'20'	+X'85'
VAvrlOrLmax=AVRL LMAX	CBLVCSW3	X'10'	+X'85'
VTunePrtSev=No Yes	CBLVCSW3	X'08'	+X'85'
VTunePrtCap=No Yes	CBLVCSW3	X'04'	+X'85'
VTunePrtJCL=No Yes	CBLVCSW3	X'02'	+X'85'
VTuneDFP22=No Yes	CBLVCSW3	X'01'	+X'85'
VCardInput=No Yes	CBLVCSW4	X'80'	+X'86'
VNonICF=No Yes	CBLVCSW4	X'20'	+X'86'
VJCLBufnd=No Yes	CBLVCSW4	X'08'	+X'86'
VForceCancel=No Yes	CBLVCSW4	X'04'	+X'86'
VOpsMsg=No Yes	CBLVCSW4	X'03'	+X'86'
VOnline=No Yes	CBLVCONL	X'80'	+X'87'
VCICS=No Yes	CBLVCONL	X'40'	+X'87'
VIMS=No Yes	CBLVCONL	X'20'	+X'87'
VDLI=No Yes	CBLVCONL	X'10'	+X'87'
VDL1=No Yes	CBLVCONL	X'08'	+X'87'
VString=No Yes	CBLVCONL	X'01'	+X'87'
VOSTr=char	CBLVCONS	-	+X'88'
VMaxOnlineCl=int (4096)	CBLVCONT	-	+X'90'
VSortOrder=EXT EXTPRIME DSN EXP DATVTOC	CBLVCSW5	-	+X'94'
VMaxExtents=int (0)	CBLVCEXT	-	+X'95'
VMinRC=int (0)	CBLVRCRM	-	+X'96'
VVTOCPercent=int (85)	CBLVCPCT	-	+X'97'
VDefine=No Yes	CBLVCSW6	X'80'	+X'98'

VGDGRepeat= No Yes	CBLVCSW6	X'40'	+X'98'
VGDGDataset= No Yes	CBLVCSW6	X'20'	+X'98'
VDefCatName= No Yes	CBLVCSW6	X'10'	+X'98'
VReorg= No Yes	CBLVCSW6	X'08'	+X'98'
VReorgDisk= No Yes	CBLVCSW6	X'04'	+X'98'
VUseCatDSN= No Yes	CBLVCSW6	X'02'	+X'98'
VDefPath= No Yes	CBLVCSW7	X'80'	+X'99'
VDefBldIndex= No Yes	CBLVCSW7	X'40'	+X'99'
VDefComments= No Yes	CBLVCSW7	X'20'	+X'99'
VDefNotes= No Yes	CBLVCSW7	X'10'	+X'99'
VDefCluster= No Yes	CBLVCSW7	X'08'	+X'99'
VDefAix= No Yes	CBLVCSW7	X'04'	+X'99'
VDelComment= No Yes	CBLVCSW7	X'02'	+X'99'
VDefJCL= No Yes	CBLVCSW7	X'01'	+X'99'
VDelCatName= No Yes	CBLVCSW8	X'10'	+X'9A'
VISCatalog= No Yes	CBLVCSW9	X'04'	+X'9B'
VTZAdjust= No Yes	CBLVCSW9	X'02'	+X'9B'
V2digitYear= No Yes	CBLVCSW9	X'01'	+X'9B'

Full **CBLNAME** field descriptions follow in **CBLNAME** offset order. Each field name is displayed together with details of its offset in **CBLNAME**, its length and also its default value. All default values are those as supplied in the file as distributed.

Detailed Field Descriptions

Common CBL Product Fields		
+X'00'	CBLHEAD DC CL55'Your Installation Name - Location'	
	This field contains your installation or company name exactly as supplied by CBL (case sensitive with blanks, commas, etc. preserved). It is mandatory that this field be specified.	
	The site name distributed to all users is restricted to between 20 and 36 characters in length. Since the CBLHEAD field can accommodate up to 55 characters, different headings may still be achieved by varying the content of positions 37 to 55.	
	Note, however, that SELCOPY CMS users should not do this since the first 16 characters of the last command are displayed at CBLHEAD+38.	
+X'37'	CBLNAMV DC X'00'	Release no. of this CBLNAME module.
	This field must contain X'00'.	
+X'38'	CBLCLINE DC AL1(0)	Default page depth.
	The lines printed per page may vary between 8 and 255, i.e. AL1(8) to AL1(255).	
	If the value is left at 0, 58 lines per page will be used for MVS systems, and the SYSLST system default will be used for VSE .	
	Run-time override is available via PAGEDEPTH=nn (or CBLCLINE=nn).	
+X'39'	CBLCPW DC AL1(0)	Default heading width.
	The heading width may vary between 72 and 160.	
	If the value is left at 0, a heading width of 132 will be used for standard reports. For REPORT VCAT/VTOC the heading width is implicitly defined by the REPORT operation.	
	Run-time override is available via PAGEWIDTH=nn .	
+X'3A'	DC XL2(0)	Reserved.
	This field must contain zeros, for upward compatibility with future versions of CBL products.	
+X'3C'	CBLCCTL DC CL2'./'	Control characters.
+X'3E'	CBLCSEP DC CL1'!	Separator character.
+X'3F'	DC XL17(0)	Reserved.
	This field must contain zeros, for upward compatibility with future versions of CBL products.	

Non-CBLVCAT Fields	
+X'50' to +X'67'	SELCOPY CBLNAME fields.
+X'68' to +X'73'	SELUPD CBLNAME fields. (Obsolete Product)

CBLVCAT Specific Fields	
+X'74'	CBLVCSPA DC X'02' Line spacing between files.
	The number of lines advanced between files on reports.
	A value of 1 will print on consecutive lines, a value of 2 will print with 1 space between files, etc.
	A value of zero will default to 2.
+X'75'	CBLVCSW1 DC X'FF' LISTVCAT options (part 1).
	This byte contains 8 independent switches that control various aspects of the LISTVCAT report (Set the byte by adding the required values together, e.g. X'80'+X'20'+X'04' = X'A4').
	Unlike the other switch fields that follow, CBLVCSW1 defaults to X'FF', with all bits on. See CBLVCSW3 and CBLVCSW6 for other LISTVCAT options.
	X'80' ON = Sets Option ASSOC . Association details can be displayed (ASSOC) or suppressed (NOASSOC).
	X'40' ON = Display ---IMB--- eyecatcher. Files with the IMBED attribute can have the eyecatcher ---IMB--- displayed in the KL,RKP/BLK/IMB column.
	X'20' ON = Display ---REP--- eyecatcher. Files with the REPLICATE attribute can have the eyecatcher ---REP--- displayed in the KL,RKP/BLK/IMB column.
	X'10' ON = Sets Option VOLINFO . Volume information can be displayed or suppressed.
	X'08' ON = Sets Option ALIAS . (For MVS) Alias information can be displayed (ALIAS) or suppressed (NOALIAS).
	X'08' ON = Sets Option SHR . (For VSE) Display either the share options only (SHR) or the class and the share options (S/C).
	X'04' ON = Sets Option PCNT . Display either the percentage used (PCNT) or number of unused (UNUSED) tracks/blocks of a file's allocated space.
	X'02' ON = Sets Option TIMESTMP . Display either the timestamp (TIMESTMP) or the defined date (DEFINED).
	X'01' ON = Sets Option EXCPS . Display either the number of Execute Channel Program operations (EXCPS) or the number of control intervals per control area (CI/CA).
+X'76'	CBLVCSCI DC AL1(1) CI splits PCNT threshold.
	When the number of CI Splits per 100 inserts to a file is greater than or equal to the value in this field, then one of the messages SEV 2-08 or SEV 3-08 "CI SPLITS TOO HIGH" is displayed (the SEVerity level depends upon the value in this field).
	However, if the total number of inserts in a file is less than 100 , then one of the above SEVerity messages is displayed when the actual number of CI splits is greater than or equal to the value in this field. The allowable values range from 1 to 99 inclusive.
+X'77'	CBLVCSA DC AL1(1) CA splits PCNT threshold.
	When the number of CA Splits per 100 inserts to a file is greater than or equal to the value in this field, the message SEV 3-06 "CA SPLITS TOO HIGH" is displayed.
	If there are CA splits and the threshold is not reached, the message SEV 2-05 "CA SPLITS EXIST" will be printed instead. The allowable values range from 1 to 99 inclusive.
+X'78'	CBLVCALW DC AL1(1) The warning threshold for Secondary Extents.
	This LISTVCAT field contains the warning threshold for files acquiring secondary extents.

	<p>This affects the format of the displayed ALLOCS value and the setting of SEV 1-18, SEV 2-19 or SEV 3-19.</p> <p>If the CBLVCALW threshold (but not the CBLVCALE threshold) is reached, the SEV 2-19 message "SEC EXTENTS TOO HIGH" is printed.</p> <p>The displayed ALLOCS value will have '*n' appended, where 'n' is the number of secondary extents.</p> <p>If Secondary extents exist but the threshold is not reached, the message SEV 1-18 "SEC EXTENTS EXIST" is displayed.</p>	
+X'79'	CBLVCALE DC AL1(10)	The error threshold for Secondary Extents.
	<p>This LISTVCAT field contains the error threshold for files acquiring secondary extents.</p> <p>This affects the format of the displayed ALLOCS value and the setting of SEV 1-18, SEV 2-19 or SEV 3-19.</p> <p>If the number of secondary extents reaches this value, the SEV 2-19 message "SEC EXTENTS TOO HIGH" is printed.</p> <p>The displayed ALLOCS value will have '****' appended and (for the standard report only) "**** nnn SEC EXTENTS ****" (showing the number of extents) will appear on the following line.</p> <p>See the CBLVCALW threshold) is field for the action taken when secondary allocation is less than CBLVCALE.</p>	
+X'7A'	CBLVPCF DC AL1(85)	File PCNT full threshold.
	<p>This LISTVCAT field contains the file full percentage threshold.</p> <p>Files that meet or exceed this value will show '**nn.n**' in the PCNT field of the detail report (The PCNT option is required to print this field on the standard report).</p> <p>This value is also used to trigger the SEV 1-09 message "FILE GETTING/IS FULL"</p>	
+X'7B'	CBLVPCV DC AL1(85)	Volume PCNT threshold.
	<p>This LISTVCAT field contains the percentage full threshold for the space controlled by VSAM catalogs.</p> <p>This field does not apply to ICF catalogs.</p> <p>When the volume summary is printed, a statistics line is also printed for each data space controlled by the catalog.</p> <p>If the percentage of used space meets or exceeds this value, it is displayed as '**nn.n**'.</p>	
+X'7C'	CBLVCFN DC XL8'0'	VSAM Catalog name.
	<p>This LISTVCAT field holds the VSAM catalog filename (DDNAME) used if the DDNAME parameter is omitted on the first LISTVCAT operation.</p> <p>Subsequent LISTVCAT operations for the run will default to catalog previously specified.</p> <p>If the field is unchanged (contains binary zeros), then the catalog name defaults to IJSYSUC.</p>	
+X'84'	CBLVCSW2 DC X'00'	LISTVTOC options.
	<p>This byte contains 8 independent switches that control various aspects of the LISTVTOC report (Set the byte by adding the required values together, e.g. X'80'+X'20'+X'04' = X'A4').</p> <p>X'C0' Reserved. These bits are reserved and should be set off.</p> <p>X'20' ON = Suppress display of volume serial number. The volume serial number can be displayed if it differs from the current volume (On some MVS systems, the volume serial number field in the DSCB1 (Format 1) record may be used for other purposes).</p> <p>X'10' ON = Sets Option FREE/FREETAB. Freespace information is to be displayed (FREE or FREETAB) or not (NOFREE), the format of the freespace information depends on the X'08' bit. (See below).</p> <p>X'08' ON = Sets Option FREETAB. If the X'10' bit is on, this controls the way in which freespace is displayed. Freespace can either be displayed in a table format (FREETAB) or within the main report (FREE).</p> <p>X'04' ON = Sets Option NOEXPD. The user can choose to display *EXPD* (EXPD), instead of the date (NOEXPD), for any files past their expiry date.</p> <p>X'02' ON = Sets Option NOPERM. The user can choose to display PERMANENT (PERM), instead of the date (NOPERM), for any files with an expiry date equal to 1999/365.</p>	

	X'01' Reserved. This bit is reserved and should be set off.	
+X'85'	CBLVCSW3 DC X'00'	LISTVCAT options (part 2). This byte contains a further 8 independent switches that control various aspects of the LISTVCAT report (Set the byte by adding the required values together, e.g. X'80'+X'20'+X'04' = X'A4'). See CBLVCSW1 and CBLVCSW6 for other LISTVCAT options. X'80' ON = Sets Option NOMOUNT . For ICF catalogs only , controls whether the system operator will be asked to mount off-line VVDS volumes (Any file that refers to a non-mounted volume will display the message " VVDS NOT OPEN "). X'40' ON = Sets Option OVLAY . Filenames longer than the DSN report field either overwrite the following fields or the filename is printed immediately, and all other fields are printed on the following line. X'20' ON = Sets Option NOINDEX . For KSDS/AIX , the file may use two lines to display the data and index components, or it may be restricted to the data component only. X'10' ON = Sets Option AVRL . Choose either the AVRL or LMAX field on the LISTVCAT standard report. X'08' ON = Sets Option NOPSEV . Print or suppress the SEVerity messages during tuning runs. This switch does not affect subset SEV=n if there is no tuning specified. X'04' ON = Sets Option NOPCAP . Print or suppress the tuning Capacity block. X'02' ON = Sets Option NOPJCL . Print or suppress the JCL Override Block for sequential processing. X'01' ON = TUNE for DFP prior to 2.2 (MVS only) When this bit is on, tuning recommendations are based on pre DFP 2.2 system considerations.
+X'86'	CBLVCSW4 DC X'00'	Release dependencies. This byte contains a further 8 independent switches that control various general release dependencies (Set the byte by adding the required values together, e.g. X'80'+X'20'+X'04' = X'A4'). X'80' ON = The CBLVCAT and CBLVTOC programs do not use SYSIPT/SYSIN . This bit maintains compatibility with job control produced for previous releases of CBLVCAT (CBLVCAT and CBLVTOC , together with CBLVTOCM , are no longer maintained, or distributed, by CBL). It is recommended that CBLV is used as the invocation program (VSE/ESA can only use CBLV). X'40' ON = Use the DFP 3.1 method to avoid STEPCATS. STEPCAT/JOB CAT switch for LISTVCAT . This bit does not affect VSE systems and is no longer used for MVS systems as STEPCATS for ICF were made redundant in DFP 3.1. THIS BIT IS SET BY DEFAULT AT RUN-TIME, UNLESS A SPECIAL ZAP HAS BEEN APPLIED. ICF users with levels of DFP below 3.1 who run without STEPCATS should contact CBL to revert to the old (Rel 9.2) error prone method of dynamically allocating the catalog. X'20' ON = VM MVS non-ICF catalog. VM users accessing MVS non-ICF catalogs, require this bit on for the DEFINE parameter. X'10' Reserved. This bit is reserved and should be set off. X'08' ON = BUFND in JCL block. When this bit is on, BUFND information will be included in the tuning JCL BLOCK for users prior to VSE/SP 4.1 (This can be of use when modelling for a new VSE release). X'04' ON = Force Cancel for VSE. For VSE/SP 2 and higher, with this bit on, a CANCEL is forced if appropriate, instead of passing a return code. Thus catering for OEM software that does not recognise OPERATING SYSTEM Return Codes. X'03' ON = Suppress console messages. When these bits are on, console messages of control statement and run time errors are suppressed.
+X'87'	CBLVCONL DC X'00'	ONLINE file control switch.

	<p>This field controls which "character strings", within the filename, are to be used to identify on-line files (Set the byte by adding the required values together, e.g. X'80'+X'20'+X'04' = X'A4').</p> <p>The string must be a complete segment for a match to occur.</p> <p>If the match is successful, the file will be considered to be eligible for on-line use, and will be tuned accordingly. The strings supported are:</p> <p>X'80' ON = 'ONLINE'</p> <p>X'40' ON = 'CICS'</p> <p>X'20' ON = 'IMS'</p> <p>X'10' ON = 'DLI'</p> <p>X'08' ON = 'DL1'</p> <p>X'06' ON = Reserved. These bits are reserved, and should be set off.</p> <p>X'01' ON = The "string" contained in CBLVCONS.</p>	
+X'88'	CBLVCONS DC XL8'0'	ONLINE file match string.
	<p>If field CBLVCONL (above) has X'01' set on, CBLVCAT will check the data set name for a match with the contents of this field.</p> <p>If the match is successful, the file will be considered to be eligible for on-line use, and will be tuned accordingly.</p> <p>Specify: CBLVCONS DC CL8'string' to change this field.</p>	
+X'90'	CBLVCONT DC F'0'	ONLINE maximum CI size.
	<p>This is the CIMAX value used if the file has been identified as on-line.</p> <p>If this field is set to zero, a CI size of 4096 is used.</p> <p>Specify: CBLVCONT DC F'nnnn' where nnnn is any valid CI size you wish to enforce.</p>	
+X'94'	CBLVCSW5 DC X'00'	LISTVTOC Sort order.
	<p>Supply one of the following values, in order to select the file sequence within VTOC reports (This order may be changed at run-time via the SORT parameter):</p> <p>X'A0' ON = By SIZE (descending)</p> <p>X'90' ON = By DATE (descending)</p> <p>X'04' ON = By EXP.</p> <p>X'02' ON = By DSN.</p> <p>X'01' ON = By EXTPRIME.</p> <p>X'00' ON = By EXTENT.</p>	
+X'95'	CBLVCEXT DC X'00'	LISTVCAT maximum number of extents printed.
	<p>This field should normally be set to X'00', as the value is designed to be set on at run time using option CBLVCEXT=nn. This will display up to n physical extents per file and can be useful for disk performance monitoring.</p>	
+X'96'	CBLVCRCM DC X'00'	Minimum Return Code.
	<p>The minimum reported Return Code (Values below this minimum are suppressed).</p> <p>Specify: CBLVCRCM DC X'10' to suppress Return Codes 1 to 15.</p>	
+X'97'	CBLVCPCT DC AL1(85)	VTOC percentage tracks used (PCNT) threshold.
	<p>This LISTVTOC field contains the percentage tracks used threshold.</p>	

	<p>When a LISTVTOC with FREETAB report is requested, the summary includes a line identified as TOTAL FREE TRACKS which also includes the percentage used.</p> <p>If this percentage used meets or exceeds this value, it is displayed as '**nn.n**'.</p>	
+X'98'	CBLVCSW6 DC X'00'	<p>LISTVCAT options (part 3).</p> <p>This byte contains a further 8 independent switches that control various aspects of the LISTVCAT report (Set the byte by adding the required values together, e.g. X'80'+X'20'+X'04' = X'A4').</p> <p>See CBLVCSW1 and CBLVCSW3 for other LISTVCAT options.</p> <p>X'80' ON = Sets Option DEFINE. Produces IDCAMS DEFINE deck output (See also CBLVCSW7 and CBLVCSW8 settings for related switches).</p> <p>X'40' ON = Sets Option GDGRPT. The GDG name is repeated on every line of a customised report which contains overflow information for that file.</p> <p>X'20' ON = DSN with generation number. NOINDEX. Append the GDG Dataset with the absolute generation number.</p> <p>X'10' ON = Suppress Catalog name. The DEFINE deck can include the Catalog name statement. If excluded the define defaults to the 'Order of Catalog Selection'.</p> <p>X'08' ON = Create Reorganisation deck. The reorganisation facility produces a skeleton jobstream which requires user attention. A suitable warning message, WARN 019, is included in the jobstream, before the IDCAMS DELETE, to emphasise this point (It is assumed that the CBL product SELCOPY is to be used to perform the file back up/restore operation). See the X'04' setting for further information.</p> <p>X'04' ON = Use disk for Reorganisation work file. Reorganisation (see above) defaults to tape as the backup media, this can be altered to disk by setting this switch on.</p> <p>X'02' ON = Catalog name Use Catalog name, instead of DDNAME, for heading of the DSN column.</p> <p>X'01' Reserved. This bit is reserved and should be set off.</p>
+X'99'	CBLVCSW7 DC X'00'	<p>LISTVCAT DEFINE defaults.</p> <p>This byte contains a further 8 independent switches that control various aspects of the LISTVCAT DEFINE parameter production. (Set the byte by adding the required values together, e.g. X'80'+X'20'+X'04' = X'A4').</p> <p>See CBLVCSW6 and CBLVCSW8 for other LISTVCAT DEFINE settings.</p> <p>X'80' ON = PATH parameters suppressed. Path decks selected by the specified SUBSET parameter(s) can be filtered out by setting this switch on.</p> <p>X'40' ON = BLDINDEX parameters suppressed. BLDINDEX constructs the data in the Alternate Index dataset. The Prime and Alternate keys from the Base Cluster are used to compose the data portion of the AIX (The BLDINDEX deck, if requested, follows the DEFINE AIX deck).</p> <p>X'20' ON = Suppress DEFINE comments. The old define values are included in a 'commented out' form in the define deck. This option allows the user to suppress the production of these comments.</p> <p>X'10' ON = Include Notes. The tuning notes available in the SYSLST report can also be part of the SYSPCH output.</p> <p>X'08' ON = Cluster parameters suppressed. Cluster decks selected by the specified SUBSET parameter(s) can be filtered out by setting this switch on.</p> <p>X'04' ON = Aix parameters suppressed. AIX parameters selected by the specified SUBSET parameter(s) can be filtered out by setting this switch on.</p> <p>X'02' ON = DELETE parameters not commented. The DELETE parameters preceeding the requested DEFINE parameters can be "commented out" ('/*' in positions 2 and 3).</p> <p>X'01' ON = Job control suppressed. MVS/VSE job control may be wrapped around the DEFINE parameters.</p>

+X'9A'	CBLVCSW8 DC X'00'	LISTVCAT IDCAMS DELETE defaults.
	<p>This byte contains a single switch that controls IDCAMS DELETE parameter production.</p> <p>X'10' ON = Suppress Catalog name. The DELETE parameters can include the Catalog name statement. If excluded it defaults to the 'Order of Catalog Selection'. Suppression of the Catalog name should be approached with care</p>	
+X'9B'	CBLVCSW9 DC X'00'	General CBLVCAT defaults.
	<p>This byte contains a further 8 independent switches that control various aspects of the LISTVCAT and LISTVTOC report. (Set the byte by adding the required values together, e.g. X'04'+X'02'+X'01' = X'07').</p> <p>X'10' ON = Suppress "X" oertype in LISTVCAT TYPE field. REPORT VCAT parameter TYPE (included as part of a standard LISTVCAT report), displays the data set type based on its DSORG, REORG, etc.</p> <p>CBLVCAT overwrites the 4th byte of the type field with 'X' if an MVS VSAM data set is defined with Extended Addressability or if a VSE VSAM cluster is defined with EXTRALARGEDATASET. Therefore, a KSDS data set with Extended Addressability will be reported as type KSDX, an ESDS data set with Extended Addressability will be reported as type ESDX, etc.</p> <p>Setting this bit on suppress this overwrite.</p> <p>X'08' ON = Display Hexadecimal representation of devices. REPORT VCAT parameter VOL2/4/5 for customised reports, prints the DEVICE column indicating the device type of the volume on which extents exist for a non-VSAM data set.</p> <p>Setting this bit on forces hexadecimal representation of the device type.</p> <p>X'04' ON = VSAM In-Storage Catalog Processing Sets option ISC to improve performance of VSAM catalog reporting for catalogs containing a large number of entries.</p> <p>Even if this bit is set ON, CBLVCAT will not invoke In-Storage Catalog processing if KEY= and/or IGN= subsetting is specified. To override this, for instances when KEY= subsetting results in a significant proportion of a large catalog being selected, the run-time option ISC should be explicitly specified in the control statements.</p> <p>X'02' ON = Catalog Report with local TIMESTMP date field. Adjust the LISTVCAT TIMESTMP column date and time using local TIMEZONE (+ or - displacement from GMT).</p> <p>Timestamp information is stored in a VSAM and ICF catalog as a Greenwich Mean Time (GMT) value. This value is adjusted by the value stored in the system local offset (Zone) controlled locally as follows:</p> <ul style="list-style-type: none"> ◇ MVS - TIMEZONE W.hh.mm.ss in SYS1.PARMLIB(CLOCKnn). ◇ VSE - IPL Command SET ZONE=WEST/hh/mm. ◇ VM - TIMEZONE DEFINITION in SYSTEM CONFIG. <p>Note that ICF and VSAM catalogs hold Timestamp information in binary units of 1.048576 seconds. The local offset in MVS and VM is also held in binary seconds. However, for VSE systems the local offset is stored in minutes, therefore the accuracy of the seconds value in the reported Local TIMESTMP column is subject to rounding errors.</p> <p>X'01' ON = Reports with 2 digit years in date fields. Catalog report columns TIMESTMP and DEFINED display 2 digit year instead of 4 digit year. Also, S/C or SHR is included as part of the standard LISTVCAT report. VTOC report columns ACCESSED, CREATED and EXPIRES display 2 digit year instead of 4 digit year.</p>	

More Non-CBLVCAT Fields		
+X'A0' to +X'BF'	CBLDOC CBLNAME fields. (Obsolete Product)	
+X'9A'	DC XL64'0'	Reserved
	This field must contain zeros, for upward compatibility with future versions of CBL products.	

QUERY CBLNAME

The **QUERY CBLNAME** operation produces a formatted display of the fields within **CBLNAME** that influence **CBLVCAT**.

Any previously supplied **OPTION** overrides will affect the output.

```

| CBLVCAT REL 9.50 AT COMPUTE (Bridgend) Ltd - Wales |
| o ----- |
| |
| | QUERY CBLNAME |
| o |
| +00 START OF CBLNAME |
| +38 CBLCLINE = X'56' | PAGEDEPTH |
| o +74 CBLVCSA = X'01' | LINE SPACING |
| +75 CBLVCSW1 = X'FE' | VCAT OPTIONS 1 |
| +76 CBLVCSA = X'01' | FLAG THRESHOLD - CI SPLITS |
| o +77 CBLVCSA = X'01' | FLAG THRESHOLD - CA SPLITS |
| +78 CBLVCALW = X'04' | FLAG THRESHOLD - SEC ALLOC |
| +79 CBLVCALE = X'0A' | ERROR THRESHOLD - SEC ALLOC |
| o +7A CBLVPCF = X'55' | FLAG THRESHOLD - FILES PCNT |
| +7B CBLVPCV = X'55' | FLAG THRESHOLD - VOLS PCNT |
| +7C CBLVCFN = 'IJSYSUC ' | VSAM CATALOG NAME |
| o +84 CBLVCSW2 = X'00' | VTOC OPTIONS |
| +85 CBLVCSW3 = X'00' | VCAT OPTIONS 2 |
| +86 CBLVCSW4 = X'00' | VCAT/VTOC SWITCHES |
| o +87 CBLVCONL = X'00' | ONLINE SWITCH FOR VCAT TUNING |
| +88 CBLVCONS = ' ' | STRING USED BY CBLVCONL |
| +90 CBLVCONT = X'00001000' | MAX CISIZE FOR ONLINE TUNING |
| o +94 CBLVCSW5 = X'00' | VTOC SORT ORDER |
| +95 CBLVCEXT = X'00' | VCAT MAX EXTENTS TO PRINT |
| +96 CBLVRCRM = X'00' | MIN RETURN CODE REQUIRED |
| o +97 CBLVCPCT = X'00' | FLAG THRESHOLD - VTOC PCNT |
| +98 CBLVCSW6 = X'00' | VCAT OPTIONS 3 |
| +99 CBLVCSW7 = X'00' | VCAT DEFINE OPTIONS |
| o +9A CBLVCSW8 = X'00' | VCAT DELETE OPTION |
| |
| o |
| |
| ** ** ** ** CBLVCAT IS LICENSED BY COMPUTE (BRIDGEND) LTD 06/
| ** EXPIRY DATE --- 6 JUN 1995\

```

Example: QUERY CBLNAME (CBL Ref: vmxqnam)

Messages

SEV Messages (Severity)

This section describes the **SEV**erity messages that are displayed during subset **SEV=n** runs and also during **tuning** runs. These messages are CBLVCAT's method of indicating a file's state of tune.

e.g.

```
*** SEV 3-19 *** SEC EXTENTS TOO HIGH
```

This example indicates that a **SEV=3** (major) problem has been encountered, which is described under **SEV message No. 19**.

When a file has been selected (either because it is out of tune for a tuning run, or by a subset **SEV=n** run) **all** the severity messages which apply to that file are displayed.

For all the SEV messages produced, CBLVCAT's **TUNE** operation will recommend the changes to the **DEFINE** parameters which will address the problem(s).

The following table lists all CBLVCAT's severity messages:

No.	SEV Levels			Message Text
01	3	2	-	ACTUAL FRSP CA = nn PC
02	3	2	-	ACTUAL FRSP CI = nn PC
03	3	-	-	ACTUAL FRSP CI = 0 PC
04	-	2	-	BUFSP TOO SMALL FOR EFFICIENCY
05	-	2	-	CA SPLITS EXIST
06	3	-	-	CA SPLITS TOO HIGH (nn PC OF INSERTS)
07	-	-	1	CI SPLITS EXIST
08	3	2	-	CI SPLITS TOO HIGH (nn PC OF INSERTS)
09	-	-	1	FILE GETTING/IS FULL
10	3	2	1	IMBED COSTS nn PC OF DATA SPACE
11	-	2	-	INDEX CISIZE IS EXCESSIVE
12	3	-	-	INDEX EXCPS DWARF DATA
13	-	2	-	INDEX EXCPS EXCEED DATA
14	-	-	1	KSDS/AIX HAS NO IMDEDED FREE SPACE
15	-	2	1	nn CYLS CAN BE RECOVERED WHEN TUNED
16	-	-	1	NRECS IS ESTIMATED
17	-	-	1	SEC ALLOC DEFINED AS ZERO
18	-	-	1	SEC EXTENTS EXIST
19	3	2	-	SEC EXTENTS TOO HIGH
20	-	-	1	SHR 4 IS EXPENSIVE
21	-	-	1	SPANNED RECORDS
22	-	-	1	SPEED NOT DEFINED - RECOVERY IS DEFAULT
23	3	-	-	TIMESTAMP CONFLICT
24	-	-	1	WRITECHECK IS EXPENSIVE
25	-	2	-	INEFFICIENT DATA CISIZE
26	-	2	1	nnnn CYLS OVER-ALLOCATED
27	-	2	-	TUNING FOR RECS/AVLRECL CHANGE REQUEST
28	-	2	-	TUNING FOR DEVICE CHANGE REQUEST
29	-	2	-	TUNING FOR GROWTH REQUEST
30	-	2	-	TUNING FOR CISIZE CHANGE REQUEST
31	-	2	-	AVLRECL: DEFINED=nnnnn~ ESTIMATED=nnnnn
32	3	-	-	FILE SHOULD NOT BE SPANNED

A full description of all SEV messages, in numerical order, now follows.

01. ACTUAL FRSP CA = nn PC**SEV=2/3 only:**Applies to **KSDS/AIX files only**. The **effective** percentage of free CIs per CA differs significantly from the defined value.

◇ **SEV=3**. The actual freespace value is at least 20% and also four times higher than defined (This indicates that the file will waste disk space and that sequential performance will suffer).

◇ **SEV=2**. The actual freespace value is at least 10 percent and also double that defined, **or** is at least 20% higher than that defined.

The problem arises because any non-zero FRSP CA request reserves at least one free CI per CA. If CI/CA is small then the minimum effective percentage can be very high (i.e. 50 percent if 2 CIs per CA).

The problem may be compounded by the **IMBED** option, which will also reduce the available CIs per CA.

Action Required:

The problem is caused by a poor combination of **FRSP CA** and **CA size**. Correct the primary and secondary allocation sizes **or** change the **FSPC** second value.

02. ACTUAL FRSP CI = nn PC**SEV=2/3 only:**Applies to **KSDS/AIX files only**. The **effective** percentage of Freespace/CI differs significantly from that defined.

◇ **SEV=3**. The actual freespace value is at least 20% and also four times higher than defined (This indicates that the file will waste disk space and the sequential performance will suffer).

◇ **SEV=2**. The actual freespace value is at least 10 percent and also double that defined, **or** is at least 20 percentage points higher than that defined.

When distributed freespace is requested within control intervals, there must be enough bytes available for at least one record insertion. If there are only a few records per control interval (due to large records and/or a small CI size) the actual amount of CI freespace reserved can be larger than the value used to define the file (e.g. For a CI containing 2 records, the minimum non-zero CI freespace is approximately 50%).

Action Required:

The problem is caused by a poor combination of **FRSP CI** and CI size. Adjust the CI size to accommodate the freespace percentage, or adjust the percentage to reflect the bytes to be left free for future inserts.

03. ACTUAL FRSP CI = 0 PC**SEV=3 only:**

The file has been defined with a non-zero **FRSP CI** value and the control interval is not large enough to reserve any **usable** freespace.

For fixed length records, this occurs if there is insufficient room for two records (allowing for VSAM's 10 control bytes per CI) whereas for variable length records it occurs if the number of bytes reserved is smaller than the average record size.

Action Required:

The problem is caused by a poor combination of **FRSP CI**, **Average record length** and **CI size**.

04. BUFSP TOO SMALL FOR EFFICIENCY**SEV=2 only:**

The minimum BUFSP value defined is insufficient for efficient random processing (If the **SEV 3-12** or **SEV 2-13** message is also displayed, the file's performance has **already suffered**).

For **KSDS** and **AIX** files, the buffer space should be large enough for two data control intervals and one index control interval per index level. A small bufferspace will increase the number of **index EXCPS** (which should always be significantly lower than the number of **data EXCPS**).

Action Required:

Alter the defined bufferspace or override it in the JCL.

05. CA SPLITS EXIST**SEV=2 only:**

Applies to **KSDS/AIX files only**. CA splits have taken place, but the number of splits is less than the CA split threshold **CBLVCSA**.

If this message is produced when the file being reported is in its worst state (just prior to backup/restore), the condition may be tolerable. If, however, there is more insert activity to take place it should be investigated.

CA splits can cause severe system or terminal response degradation. While it is ultimately best not to suffer CA splits, it may be that the cost of eliminating them entirely is too high compared to the increased file space required when specifying a high CA freespace percentage.

The prime area of concern, when evaluating a tolerable CA split level, is the amount and nature of insert activity on the file. Other file attributes such as CI freespace, or different size CIs may also help the situation.

Action Required:

None essential, however, performance will be improved if the file is re-defined and re-loaded. If inserts are likely to continue, you should increase **FRSP CI** and/or **FRSP CA** first.

06. CA SPLITS TOO HIGH (nn PC OF INSERTS)**SEV=2 only:**

Applies to **KSDS/AIX files only**. The percentage of inserts causing CA splits exceeds the CBLVCSCA threshold.

When files consistently show this message it is an indication the file needs more frequent re-organisation or that inserts are occurring heavily in pockets around the file, rather than being evenly distributed.

When a Control Area split occurs, it can have a dramatic impact on performance. Although the degree of degradation depends on the mode of processing, the CA size and the amount of data being moved, it is ultimately desirable to avoid all CA splits.

If record insert activity occurs heavily in pockets, the obvious immediate solution would be to increase CA freespace which would require more space for the file. To compensate, it is worth considering a reduction in CI freespace since only small areas of the file are insert bound. Initially this will create more CI splits, but once the CI has been split into a free CI in the same CA, the original and new CIs will have more freespace available. Thus, split activity will tend to stabilise, and CA splits can be reduced without having to sacrifice more disk space.

Action Required:

The file should be re-defined and re-loaded. If inserts are likely to continue, you should increase **FRSP CI** and/or **FRSP CA** first.

07. CI SPLITS EXIST**SEV=1 only:**

Applies to **KSDS/AIX files only**. The file has experienced CI splits in the Data and/or Index component, however the number of splits has not exceeded the CI SPLIT warning threshold defined by the CBLNAME field **CBLVCSCI**.

A small number of CI splits is not necessarily a problem since it may indicate that the amount of CI freespace is not excessive. In addition, when a CI is split, the result is two CIs which are ready to receive additional records. The amount of additional free space caused by the original split will usually accommodate more records than the CI was able to accommodate after initial loading of the file.

Total elimination of CI splits (by allowing additional freespace) may adversely affect sequential processing. This is because the additional freespace in each CI will result in fewer data records per CI and consequently fewer records transferred with one physical I/O operation.

Action Required:

None.

08. CI SPLITS TOO HIGH (nn PC OF INSERTS)**SEV=2/3 only:**

Applies to **KSDS/AIX files only**. If either of these messages are displayed, then the percentage of inserts causing CI splits exceeds the **CBLVCSCI** threshold (Note that when the number of inserts is less than 100, the **actual** number of CI splits is compared with the **CBLVCSCI** threshold).

◇ **SEV=3**. The number of CI splits per 100 inserts is greater than the threshold (and also greater than 30). This indicates that there is insufficient reserved freespace or that the file is overdue for re-organisation.

◇ **SEV=2**. The number of CI splits per 100 inserts is greater than the threshold but less than 30 (Note that if the chosen value for **CBLVCSCI** is greater than 30 then the **SEV 2-08** message is suppressed).

CI splits are not always avoidable on files with high insert activity, however, an excessive number of CI splits causes degradation at split time, and also at retrieval time. A high number of CI splits is usually a prelude to the occurrence of CA splits.

Possible reasons for this message are as follows:

- ◇ The CI size is incorrect for this file.
- ◇ The CI freespace value is incorrect or inadequate for the amount of insert activity.
- ◇ The file is not being backed up and re-organised frequently enough.

Action Required:

The file should be re-defined and re-loaded. If inserts are likely to continue, you should increase **FRSP CI** and/or **FRSP CA** first.

09. FILE GETTING/IS FULL**SEV=1 only:**

Applies to **KSDS/AIX files only**. The **current** space occupied by the file has reached the **CBLVPCPF** threshold (default 85%).

This message **may** be cause for concern if further record insertions are likely to occur.

The **PCNT** field (column) will also show *****nn.n****, ***** ALL ***** or *****FULL***** (If the file is full and **no** secondary allocation is defined then *****FULL***** is displayed. However, when secondary allocation is defined ***** ALL ***** is displayed).

If the file is cyclical in growth in that it starts off small, accumulates records for a period of time and is then emptied, it may not be feasible to allocate enough primary space to hold the maximum number of records the file could ever possibly contain. Year to date, or transaction files tend to experience this type of growth. For this type of file, tolerable primary and secondary allocation values need to be found which will not cause excessive allocation degradation. At the same time, they must not tie up an excessive amount of yet unused space.

Action Required:

None, **except if** additions to the file are expected and there is no secondary allocation. In this case, re-define and re-load the file with new primary and/or secondary allocation values.

10. IMBED COSTS nn PC OF DATA SPACE**SEV=1/2/3:**Applies to **KSDS/AIX files only**.

- ◇ **SEV=3.** There is more than one **small** data CA in use and **IMBED** uses at least **25 percent** of the data area.
- ◇ **SEV=2.** There is more than one **small** data CA in use and **IMBED** uses between 10 and 25 percent of the data area.
- ◇ **SEV=1.** There is more than one **small** data CA in use and **IMBED** uses less than 10 percent of the data area.

See **IMBED and REPLICATE** in **Additional VSAM Information** for a description of **IMBED**.

Action Required:

For small files (less than one cylinder), remove **IMBED**. For larger files, increase the primary and/or secondary allocation size, in order to maximise CA size.

11. INDEX CISIZE IS EXCESSIVE**SEV=2 only:**Applies to **KSDS/AIX files only**.

Generally, an overlarge index CI size is not a very serious condition, as the index component is relatively small.

It is **essential** that index CI size is not too low, otherwise whole data control intervals are unusable.

See **LEVELS OF INDEX** in **Additional VSAM Information**.

Action Required:

None immediately. When next defined, either let VSAM default the index CI size, or supply the lower one recommended by CBLVCAT.

12. INDEX EXCPS DWARF DATA**SEV=3 only:**

Applies to **KSDS/AIX files only**. The number of **index EXCPS** stored in the catalog is at least twice that of the **data EXCPS**.

Performance has **already suffered** greatly (If the **SEV 2-04** message is also displayed, **the degradation will continue**).

The condition is caused by insufficient buffer space for the index. Increasing the **BUFSP** value is the usual cure, however, CBLVCAT may recommend changes to the data and/or index CI sizes in preference.

See **BUFFER SPACE** and **INDEX CISIZE** in **Additional VSAM Information**.

Action Required:

Alter the **defined BUFSP**, or increase the **BUFSP** or **BUFNI** parameter on your JCL overrides.

13. INDEX EXCPS EXCEED DATA**SEV=2 only:**

Applies to **KSDS/AIX files only**. The number of index EXCPS is at least equal to, but not double, the number of Data EXCPS (In the case of it being double, **SEV 3-12** would be displayed).

Although the condition is likely to be less serious than for **SEV 3-12**, it is possible that recent additions to the file may have increased the number of index levels, thus making the current **BUFSP** inadequate. If such a change has occurred recently, the overall comparison of **index** and **data EXCPS** does not reflect the current situation.

Action Required:

Alter the **defined BUFSP**, or increase the **BUFSP** or **BUFNI** parameter on your JCL overrides.

14. KSDS/AIX/VRDS HAS NO IMBEDDED FREE SPACE**SEV=1 only:**

For **KSDS** and **VRDS** files, no space has been reserved for record insertions.

For **AIX files** with the **UPGRADE** attribute, no space has been reserved for inserts caused by additions to the base cluster (AIX files without **UPGRADE** do not require freespace).

Action Required:

None, **if** no inserts are expected.

If additions are to be made, the file should be re-defined and re-loaded. You should decide the filesize percentage increase required between re-organisations, and run a **LISTVCAT TUNE** with an appropriate **GROWTH** value.

15. nn CYLS CAN BE RECOVERED WHEN TUNED**SEV=1/2 only:**

Space currently allocated to the file, may be recovered for use by other files, **but only if tuned as recommended**.

- ◇ **SEV=2.** 50 percent of the current total allocation, **or** at least 10 cylinders (or MAX-CAs), may be recovered.

- ◇ **SEV=1.** The **SEV 2-15** condition is not satisfied, but 25 percent of the current total allocation, **or** at least 2 cylinders (or MAX-CAs), may be recovered.

Action Required:

None necessary.

If you want to recover space, the file must be re-defined with the recommended changes.

16. NRECS IS ESTIMATED

SEV=1 only:

The catalog statistics are invalid for this file.

This generally occurs when the file has been accessed by physical control interval, instead of logically by record.

CBLVCAT estimates the number of records from the space in use and the defined average record length (see [Guide to VSAM Tuning](#) for details).

Action Required:

None. For information only.

17. SEC ALLOC DEFINED AS ZERO

SEV=1 only:

No secondary allocation or expansion is possible for this file.

This may be valid, as static files require no secondary allocation or some products may not allow it for their files.

Action Required:

None. For information only.

18. SEC EXTENTS EXIST

SEV=1 only:

Secondary extents have been acquired, however, the warning threshold (option **CBLVCALW**) has not yet been reached.

Action Required:

None. For information only.

19. SEC EXTENTS TOO HIGH

SEV=2/3 only:

An unacceptable number of secondary extents have been acquired.

- ◇ **SEV=3.** The number of secondary extents has reached the **CBLVCALE** error threshold.

- ◇ **SEV=2.** The number of secondary extents has reached the **CBLVCALW** warning threshold but not the **CBLVCALE** value.

When a file's primary allocation space becomes full, VSAM allows the file to be extended if it was defined with a secondary allocation. While this facility is beneficial in preventing program failures due to file full conditions, it can be very costly in performance if it occurs too often.

Action Required:

Re-define and re-load the file with a larger primary allocation.

20. SHR 4 IS EXPENSIVE

SEV=1 only:

Share option 4 should only be used when absolutely essential as it uses the 'track hold' facility and is expensive in terms of machine resources.

Action Required:

If multiple write capability is not essential, change to a different share option.

21. SPANNED RECORDS

SEV=1 only:

Applies only to **KSDS/ESDS** files.

The use of spanned records should only be necessary for files with the occasional very long record, thus allowing a smaller CI size. In most other cases, the maximum record length and CI size may be changed to allow its removal.

See **SPANNED** in [Tuning Principles](#) for information on the SPANNED attribute.

Action Required:

None, for information only (unless the **SEV 3-32** is displayed as well, in which case you should re-define with a larger **data CFSIZE** and remove the **SPANNED** parameter).

22. SPEED NOT DEFINED - RECOVERY IS DEFAULT

SEV=1 only:

The file was defined with **RECOVERY**, (or no **SPEED** define parameter was supplied and the default is **RECOVERY**).

The **RECOVERY** overhead is costly and should be avoided unless absolutely necessary.

See **SPEED v RECOVERY** in [Tuning Principles](#) for information on the **SPEED/RECOVERY** attribute.

Action Required:

None, for information only (unless the Replace **RECOVERY** with **SPEED** (or add **SPEED** to the **DEFINE** parameters).

23. TIMESTAMP CONFLICT**SEV=3 only:**

Only applies to **KSDS/AIX** files. CBLVCAT has detected a discrepancy in the **timestamps** of the **index** and **data** components.

This could indicate that the data or index has been updated independently (or a system failure not fully completing an update).

Action Required:

Investigation is essential, since there is a strong possibility that the file is now corrupt. The common recovery path is via backup, however, it is possible to retrieve your data by treating the data component as an **ESDS** file, copying it to a sequential file, sorting it and, finally, loading it into a new KSDS.

24. WRITECHECK IS EXPENSIVE**SEV=1 only:**

The **WRITECHECK** or **WCK** define parameter is active and has large system overheads (**WRITECHECK** is unnecessary for today's reliable disks).

See **WRITECHECK** in **Tuning Principles** for information on the **WRITECHECK** attribute.

Action Required:

Remove the **WRITECHECK** attribute via **ALTER** and also remove it from your **DEFINE** parameters, ready for the next file re-organisation.

25. INEFFICIENT DATA CISIZE**SEV=2 only:**

There is a poor match between the average record length and the CI size and a CI size is available that will increase file capacity by 25% (For large files, increases of 6 percent are also flagged).

This mis-match wastes disk space and can also affect sequential performance as more I/O will be required.

Action Required:

No immediate action is required.

26. nn CYLS OVER-ALLOCATED**SEV=1/2 only:**

Although the file is well-tuned, space is allocated but unused and may be recovered for use by other files.

◇ **SEV=2.** 50 percent of the current total allocation, **or** at least 10 cylinders (or MAX-CAs), may be recovered.

◇ **SEV=1.** The **SEV 2-26** condition is not satisfied, but 25 percent of the current total allocation, **or** at least 2 cylinders (or MAX-CAs), may be recovered.

Action Required:

None necessary.

If you want to recover space, however, the file must be re-defined with the primary and secondary allocations reduced, as appropriate.

27. TUNING FOR RECS/AVRECL CHANGE REQ**SEV=2 only:**

Tuning has been influenced by the **RECORDS=nnn** / **AVLRECL=nnn** tuning parameters.

Action Required:

None. For information only.

28. TUNING FOR DEVICE CHANGE REQUEST**SEV=2 only:**

Tuning is for a different DASD device, in accordance with the supplied **DEV=nnnn** parameter.

Action Required:

None. For information only.

29. TUNING FOR GROWTH REQUEST**SEV=2 only:**

Tuning has been influenced by the supplied **GROWTH=nn** or **FRSPCA=nn** / or **FRSPCI=nn** tuning parameters.

Action Required:

None. For information only.

30. TUNING FOR CISIZE CHANGE REQUEST**SEV=2 only:**

Tuning has been influenced by the supplied **CISIZE** or **CIMIN** / **CIMAX** tuning parameters.

Action Required:

None. For information only.

31. AVLRECL: DEFINED=nnnn ESTIMATED=nnnn

SEV=2 only:

CBLVCAT calculated the range of possible average record lengths based on the space used and number of records. It has found that the defined length does not fall within this range.

The message is only displayed if the estimated average record length is +/- 50% of the defined average record length.

Action Required:

None is essential.

If you know that the actual average length is lower than CBLVCAT's estimate, changing the defined average record length via **ALTER**, or specifying **AVLRECL=nnn** can improve CBLVCAT's tuning recommendations.

32. FILE SHOULD NOT BE SPANNED**SEV=3 only:**

Performance will be improved if the CI size is increased and the **SPANNED** attribute removed.

Action Required:

Re-define and re-load the file using CBLVCAT's tuning recommendations.

Warning Messages

The format of warning messages is:

e.g.

```
*** WARN   nnn *** text of message
```

The following messages are displayed where appropriate (**Return code 06** is also given but the operation will continue processing).

01. nn = RETURN CODE FROM CBLVCAT

See the **Return Code** section of this chapter for an explanation of **nn** (The listing may contain other warning or error messages).

02. INVALID RBA FOUND IN CATALOG

A return code of X'08' with error code X'20' has been encountered during Request Macro processing (CBLVCAT continues processing but users are advised to investigate the Catalog corruption and act accordingly).

03. VOLUME GETTING/IS FULL

A return code of X'08' with error code X'20' has been encountered during A **LISTVTOC** with **FREETAB** operation displays the **Percentage tracks used**. This value has reached the **CBLVCPCT** threshold.

04. TUNING CANCELLED - NO VALID CFSIZE

A **CFSIZE** or **CIMAX** restriction parameter has been supplied, and it is impossible to choose a CI size without converting the file to **SPANNED**.

05. volser - DYNALLOC OPEN ERROR nnn

For ICF catalogs only. Dynamic allocation of the VVDS of one of the associated volumes has failed (See the **MOUNT** / **NOMOUNT** options).

06. volser - VVDS NOT OPEN

For ICF catalogs only. An associated VVDS has been dynamically allocated, but the open has failed (The pack may have been dismounted).

07. volser - NO ENTRY IN VVDS FOR THIS FILE

For ICF catalogs only. An associated VVDS has been dynamically allocated and opened, but there is no entry for the file (The VVDS is probably out of step with the ICF Catalog).

08. DATA NOT AVAILABLE

Normally, this error is caused by another program having exclusive control of the Catalog. However, it can also occur when CBLVCAT issues a read request to VSAM and does not receive expected type of record (In this case, a count of such **logic** errors is displayed in the catalog summary and also at the end of the report as a **WARN 009** message).

09. nn READ ERRORS - LOGIC ERROR

A count of **WARN 008** message). messages for the catalog. This **may** be caused by corruption of the catalog.

10. NO FILES SELECTED

Check **SUBSET** parameter(s) for undesired specification(s).

11. NO FILES TUNED

A **TUNE** run has resulted in none of the selected files requiring tuning at the specified **SEV** level (Unless the **SEV** parameter is specified, **TUNE** effects an implied **SEV=2**).

12. DATA SPACE GETTING/IS FULL

This message applies to **non-ICF** catalogs only. The **dataspace(s)** defined to the VSAM catalog is(are) full or nearly full (The **PCNT** field in the volume summary indicates the percentage of defined space that is **currently** used by files). The dataspace is regarded as nearly full once the **PCNT** value reaches the **CBLVCPCV** threshold (default 85% - See **CBLNAME**).

This message **may** be a cause for concern if files defined to the catalog are likely to grow. (Additional dataspace, if available, can be defined to the Catalog).

13. nn READ ERRORS - TOTAL LOGIC ERRORS

A count of **WARN 008** messages for all catalogs read see **WARN 008** and **WARN 009** above). This **may** be caused by corruption of the catalog (as this is a potentially serious warning, **Return Code 14** is set).

14. DEFAULT HIGH LMAX IS DEFINED

A **default maximum record length** has been detected. CBLVCAT assumes that the defined maximum record length is correct, as to change it requires local knowledge (If the maximum record length is incorrect it should be corrected before attempting to tune, as it will have an adverse effect on tuning).

15. LARGE AVLRECL CHANGE

The CBLVCAT **estimated average record length** is at least **+/-50%** of the **defined average record length**. It is recommended that the actual value is obtained (Users of **SELCPY** can contact CBL for a job to calculate an accurate average record length). See **AVLRECL Estimation** in **Tuning Considerations** for information on average record length.

16. LARGE ALLOC CHANGE

The CBLVCAT **estimated allocation** is at least **+/-50%** of the current **total allocation**. Local knowledge, of previous and intended use of the file, is required before making large changes to allocations (This warning may be accompanied by **WARN 015** and/or **WARN 017**. Attention to these warnings could address the allocation issue).

17. LARGE NRECS CHANGE

The CBLVCAT **estimated number of records** is at least **+/-50%** of the **current number of records**. Tuning for **reusable** files, involves an estimation of the maximum number of records possible considering the allocation (It is recommended that the user checks the estimated number of records). See **Guide to VSAM Tuning** for further details.

18. TUNING REQUEST FOR MULTIVOLUME

A request has been made to tune a **multivolume** file and CBLVCAT does not provide tune information for multivolume files. Volume allocation is dependent upon local management standards as well as system programming requirements. Therefore, it requires user input to decide on the best volumes to use. (A **LISTVTOC** report will however give the user **free space** information on the relevant volumes which can be helpful in deciding file allocations).

19. SKELETON DECK ONLY - ATTENTION REQUIRED

A reorganisation deck has been requested and the resulting skeleton jobstream requires user attention before submission (Removal of the warning message is then taken as acceptance of responsibility for the job by the user, who should ensure that adequate back-up exists for the file(s) being reorganised).

20. MOD DSN/NEWDSN ARE EQUAL

The **DSN** and **NEWDSN** arguments, for a **MOD** operation, are equal and therefore the **MOD** operation is ignored.

21. macro MACRO ERROR RC nn (HEX) - cuu

CBLVCAT has received an unexpected return code from one of its internal assembler macros. The processing continues as other non-dependent operations follow.

22. CONFLICTING CATALOG STATISTICS

General warning returned by CBLVCAT when unexpected values are found in the VSAM/ICF catalog or VVDS. Should not occur - contact CBL.

Error Messages

Control card **syntax errors** are detected before any CATALOG or VTOC processing commences. All control cards must be syntactically correct before any commands are executed (unless **FAIL=IGNORE** is used to force CBLVCAT to run all syntactically correct commands). Some errors, however, will always cause CBLVCAT to cancel as it may be impossible to attempt any further operations. The format of error messages is as follows:

e.g.

```
*** ERROR nnn *** text of message
```

The following errors all terminate the current operation and result in a **return code 52** (The action taken depends on the **FAIL** parameter, which defaults to **FAIL=CANCEL**).

01. DEVnnn No lub found (VSE systems only)

DEV=nnn has been specified for **DEL**, **LISTVTOC** or **MOD** and there is no program logical unit (SYS000 - SYS254) currently assigned to that particular drive.

02. SYSnnn UA or IGN (VSE systems only)

SYS=nnn has been specified for **DEL**, **LISTVTOC** or **MOD** and is **unassigned** or assigned to **ignore**.

03. SYSnnn NOT DASD - cuu (VSE systems only)

SYS=nnn has been specified for **DEL**, **LISTVTOC** or **MOD** and is assigned to 'cuu', which is not a disk drive.

04. VTOC Open Error

The **CVH** (Common VTOC Handler) routine failed to open the VTOC.

05. ERROR READING VOL LABEL

The **LISTVTOC**, **MOD** or **DEL** operation cannot read the DASD Volume Label.

06. ERROR READING F4 LABEL

The **LISTVTOC**, **MOD** or **DEL** operation cannot read the first record within the VTOC (This usually occurs on new, uninitialised volumes).

07. ERROR READING F1 LABEL

The **LISTVTOC**, operation has encountered an I/O error reading the VTOC.

08. INVALID QUERY

An unsupported parameter has been supplied to the **QUERY** operation (only **CBLNAME** is valid).

09. INVALID REPORT

The first parameter supplied to the **REPORT** operation refers to the type of report that you are defining (Valid parameters are: **VCAT** or **VTOC**).

10. LIST OPERATION ONLY FOR ALL (VSE systems only)

DEV=ALL or **SYS=ALL** has been specified for a **DEL** or **MOD** operation, and support is for the **LISTVTOC**, operation only.

11. INVALID FAIL PARAMETER

The **FAIL** parameter has been supplied with an unrecognised argument (Valid arguments are: **CANCEL**, **EOJ**, **IGNORE** and **IGN**).

12. REPORT EXCEEDS PAGEWIDTH

Pagewidth (ie. Report width as opposed to parameter **PAGEWIDTH**) in this release, is equivalent to 250 (Change your report parameters to display fewer fields, or reduce the spacing between them).

13. CBLV PROGRAM NOT AUTHORISED (MVS systems only)

ERROR 13 is returned if the CBLV program is not authorised (Link Edited with option AC=1) or is not Link Edited in an authorised load library, and a catalog listing is requested. In releases of CBLV prior to 2.10, this would cause an abend IEC161I followed by ERROR 051.

14. INVALID DEV PARAMETER (VSE systems only)

The **LISTVTOC**, **DEL** or **MOD** operation has a **DEV** parameter with an invalid argument (The argument format must be **cuu** or **X'cuu'**).

15. INVALID OPERATION - xxxxx

See the **SUMMARY of Syntax** for the list of CBLVCAT's operation words.

16. INVALID PARAM - xxxxx

This parameter is unrecognised by this release of CBLVCAT.

17. unused

18. VOL REQD FOR ALLFILES (VSE systems only)

ALLFILES=YES has been supplied for a **DEL** operation (As this clears all the files from the volume, the **VOL** parameter is mandatory as a safety measure).

19. DSN OR ALLFILES REQD ON DEL CARD (VSE systems only)

The **DEL** operation has no parameter supplied to select the file or files to be deleted.

20. NO FORMAT 1 RECORD (VSE systems only)

For the **MOD** or **DEL** operation. There is no entry found in the VTOC for the **DSN** specified.

21. NEWVOL, NEWOWN OR DSN REQD ON MOD CARD (VSE systems only)

The **MOD** operation has no parameter supplied to select the modification to be performed.

22. NEW FILE ALREADY EXISTS (VSE systems only)

For the **MOD** operation only. The file specified by the **NEWDSN** parameter exists already.

23. INVALID EXP - TEMP OR PERM ONLY (VSE systems only)

For the **MOD** operation only. The **EXP** parameter has an invalid argument. The only values permitted are **EXP=TEMP** or **EXP=PERM**.

24. NO MODIFICATION TO BE PERFORMED (VSE systems only)

On a **MOD** operation the control statement is incomplete (Check for missing **DSN** or **VOL** parameter).

25. VOL AND OWNER CONFLICT (VSE systems only)

On a **LISTVTOC**, **DEL** or **MOD** operation, both **VOL** and **OWN** are specified, but the pack mounted only satisfies one of the parameters.

26. unused

27. cuu - NO PUB ENTRY (VSE systems only)

On a **LISTVTOC**, **DEL** or **MOD** operation, **DEV=cuu** or refers to a non-existent device.

28. SYSnnn ASSGND TO cuu (VSE systems only)

On a **LISTVTOC**, **DEL** or **MOD** operation, **SYS=nnn** and **DEV=cuu** are both specified, and there is an assignment conflict.

29. unused

30. unused

31. ERROR WRITING F1 LABEL (VSE systems only)

On a **DEL** or **MOD** operation, an error has occurred attempting to re-write an F1 label.

32. ERROR WRITING VOL LABEL (VSE systems only)

On a **DEL** or **MOD** operation, an error has occurred attempting to re-write the volume label.

33. INVALID OWN PARAMETER (VSE systems only)

On a **DEL**, **LISTVTOC** or **MOD** operation, the **OWN** parameter has an invalid argument (The **owner field** in the volume label contains 1 to 10 alphanumeric characters).

34. INVALID VOL PARAMETER

On a **DEL**, **LISTVTOC** or **MOD** operation, the **VOL** parameter has an invalid argument (The argument must contain six alphanumeric characters).

35. INVALID NEWOWN PARAMETER (VSE systems only)

On a **MOD** operation, the **NEWOWN** parameter has an invalid argument (The **owner field** in the volume label contains 1 to 10 alphanumeric characters).

36. INVALID NEWVOL PARAMETER (VSE systems only)

On a **MOD** operation, the **NEWVOL** parameter has an invalid argument (The argument must contain six alphanumeric characters).

37. MISSING DDNAME PARAMETER (MVS systems only)

DDNAME is required for **LISTVTOC** operations, in order to reference the required volume, unless the **VOL** or **DEV** parameter is supplied instead.

38. CARD AREA OVERFLOW

Data is used from card columns 1 - 71, and **column 72 must be blank**. Failure to observe this rule is the normal reason for this error (It could occur also if CBLVCAT's work buffer cannot hold all the parameters for the current operation, however, this is very unlikely, as "white space" is ignored and the buffer can hold 1024 characters).

39. cuu - NO ASSIGNMENTS (VSE systems only)

On a **DEL**, **LISTVTOC** or **MOD** operation, **DEV=cuu** has been supplied and there are no **SYSnnn** assignments to that particular drive.

40. unused

41. INVALID OP ON FBA DEVICE (VSE systems only)

Modification of the volume label is not supported for FBA disks.

42. INSUFFICIENT STORAGE

Insufficient virtual storage available (On **VSE** systems, users should check that the **EXEC** card has a **SIZE** parameter that allows sufficient **GETVIS** space for VSAM).

43. unused

44. INVALID SYS NUMBER (VSE systems only)

On a **DEL**, **LISTVTOC** or **MOD** operation, the **SYS** parameter value exceeds the number of Logical Unit Blocks available.

45. INVALID NUMERIC ARGUMENT FOR xxxxx

The number argument is outside the allowable range for this particular parameter.

46. SORT FAILED

On a **LISTVTOC** operation, sorting the extent entries has failed (This error should never occur, so please contact the CBLVCAT query desk at CBL).

47. MAXLRECL LOWER THAN AVLRECL

On a **LISTVCAT TUNE** operation, **MAXLRECL** and **AVLRECL** parameters have been supplied, but it is illegal for the average length to exceed the maximum length.

48. ddname - NO DD CARD

A **LISTVTOC** or **LISTVCAT** operation has been invoked via the **DDNAME** parameter and the corresponding **DD** statement has not been supplied in the JCL.

49. unused

50. CATALOG NOT VSAM OR ICF

On a **LISTVCAT** operation, a VSAM KSDS file has been opened successfully, but CBLVCAT does not recognise it as a catalog (Check your job control statements against the **DDNAME** parameter).

51. VSAM nnn (DEC) OPEN ERROR

A **LISTVCAT** operation has failed with a VSAM open error (See the appropriate VSAM Messages and Codes manual). The text for the VSAM return code will generally give sufficient details to correct the error.

52. VSAM nnn (DEC) POINT ERROR

For VSAM (not ICF) catalogs only, A **LISTVCAT** operation has failed with a VSAM point error (This error should never occur, so please contact the **CBLVCAT query desk** at CBL).

53. VSAM RC nnn EC nnn (DEC) READ ERROR

A **LISTVCAT** operation has failed with a VSAM read error (See the appropriate VSAM Messages and Codes manual). The text for the VSAM return code and error code combination will generally give sufficient details to correct the error (If this message appears without a return code or error code then please contact CBL).

54. VSAM LOCATE HAS FAILED

LISTVCAT catalog reference was by **REF** and VSAM was unable to locate the catalog containing this data set.

55. VSAM DYNALLOC ERROR nnnn-nnnn (DEC)

LISTVCAT catalog reference was by **REF**. CBLVCAT successfully located its catalog, but was unable to dynamically allocate it (nnnn-nnnn are the respective Return and Reason codes in decimal).

56. VTOC DYNALLOC ERROR nnnn-nnnn (DEC)

LISTVTOC reference was by **VOL** or **DEV** and dynamic allocation has failed (nnnn-nnnn are the respective Return and Reason codes in decimal).

57. UNIT VERIFICATION ERROR nnn (DEC)

LISTVTOC reference was by **DEV**. Unit Verification has failed with a Return Code of nnn (decimal). Please correct the Unit-Name supplied in the **LISTVTOC** operation.

58. INVALID UNIT NAME PARAMETER

A **LISTVCAT** operation has an invalid argument (The argument can contain up to 8 alphanumeric characters).

59. INVALID SECOND VOLN PARAMETER

Only one **VOLn** parameter is allowed in a **REPORT VCAT** operation for a GDG/NONVSAM entry.

60. SYSPUNCH OPEN ERROR

The **DEFINE** option outputs to SYSPUNCH, check the status, correct and re-run.

61. INVALID PAGE GEOMETRY

The geometry specified is not within the defined limits.
The **minimum PAGEDDEPTH** is 10 lines. The **maximum** is 32767.
The **minimum PAGEWIDTH** is 72 bytes. The **maximum** is 160 bytes.

62. VVDS FORMAT NOT RECOGNISED

On a **LISTVCAT VVDS=volser** operation, a VVDS has been opened successfully, but CBLVCAT does not recognise the format of the record returned (This could occur because the VVDS is corrupt or the format of the VVDS has changed). Please contact the **CBLVCAT query desk** for advice.

63. CONFLICTING CATALOG STATISTICS

This error should not occur, please contact the **CBLVCAT query desk**.

64. macro MACRO ERROR RC nn (HEX) - cuu

CBLVCAT has received an unexpected return code from an internal assembler macro.

Console Messages

Expiry Warning

When the CPU date is within four weeks of the product expiry date, an expiry warning message will be reported on the operator console, for every execution of CBLVCAT. Thus, to most installations, it will be well worth having the up-to-date release in place before the warning commences. The format of the warning is as follows:

e.g.

```
CBLVCAT REL N.NN      *** WARNING ***      EXPIRY DATE --- N JUN YYYY
```

This warning is **not** given on the **SYSLST/SYSPRINT** file, although the product expiry date is always reported at the bottom of **SYSLST/SYSPRINT** file.

Error Messages

When CBLVCAT detects a **control card** or **run time** error the appropriate message is logged to the operator console (in addition to the message reported in the listings). This can be suppressed by setting **CBLNAME** switch **CBLVCSW4** to **X'03'** or using the run-time option.

Wrong Volume

For **VSE** systems only. The following message is displayed when the drive contains the wrong volume:

```
*** WRONG VOL=volume1 SYSnnn volume2 CUU 'owner' ***
```

Drive **CUU** currently holds volume '**volume2**' which has an ownerid of '**owner**' and was referenced via **SYS=nnn**. The drive should hold '**volume1**'. The operator may reply:

<enter>	the current FAIL option is used.
NEWPAC	CBLVCAT retries the operation and assumes the correct volume has been mounted and made operational.
IGNORE	the operation is ignored and FAIL=IGN is now current.
EOJ	terminate the job immediately.
CANCEL	cancel the job.

Miscellaneous Messages

*** nnn SEC EXTENTS ***

The number of secondary extents acquired has reached the **CBLVCALE** error threshold. The **SEV 3-19** message will always accompany this warning.

** nnn CI SPLITS**

The number of CI splits has reached the **CBLVCSCI** threshold.

** nnn CA SPLITS**

The number of CA splits has reached the **CBLVCSCA** threshold.

VOLn=volser

The file referred to resides on more than one volume, or a volume other than the catalog volume.

CANDIDATE VOLn=volser

The file referred to is eligible to be expanded onto this volume, but has not grown sufficiently to do so.

EXTENT nnn nnn/nn - nnn/nn

Extent information as selected by the **CBLVCEXT** setting.

ASSOC -- AIX=dataset.name.aix

ASSOC -- PATH=dataset.name.path

Associations, other than data or index, printed under **DSN** on the next line. Printing association details can be enabled/disabled using the **ASSOC/ NOASSOC** option, or by changing **CBLVCSW1** in your **CBLNAME** program.

NOALLOC=nn

VSE systems only. Indicates how much space would be required if all **WORK** files were opened at once.

MAXLVL=nn

The maximum number of generations for a GDG.

G=NONE

A GDG has no active generations.

Vnn=nnn

The version number and generation number of a GDG.

Return Codes

When CBLVCAT detects an error condition, while running under any operating system, a return code is set and reported in the following format:

```
*** WARN nnn *** nn = RETURN CODE FROM CBLVCAT
```

A **Minimum Return Code** may be defined in the field **CBLVCRCM** in **CBLNAME**. Any Return Code that is below this minimum is automatically suppressed and replaced with zero, but is still reported in the **SYSLST/SYSPRT** file.

e.g.

```
CBLVCCRM=X'10'      * Suppress Return Codes 1 to 15.
```

Under operating systems where the Return Code can be tested, e.g. **OS**, **MVS**, **VSE/SP 2.1** or higher and **CMS** (with DOS on or off), CBLVCAT will terminate normally, allowing the user to process the Return Code within the JCL or equivalent.

Under operating systems where the Return Code cannot be tested, e.g. **DOS**, **DOS/VS** and **VSE/SP 1**, if the Return Code is less than or equal to 16, then termination is normal, with no indication of a problem except for the ***** WARN 001 *****, etc. on the summary.

If the Return Code is greater than 16, CBLVCAT will terminate with a cancel macro, which will flush subsequent steps from the reader to the next **// JOB** card.

Users of **OEM software** that does not recognise operating system Return Codes can **force cancel**, for **VSE/SP2** and higher, by setting the **CBLVCSW4 X'04'** bit on.

CBLVCAT generated Return Codes are as follows:

00.	Clean Run No abnormal condition encountered.
04.	No Files Selected. The subsetting criteria used has caused no files to be selected.
06.	Warning Message Occurred. The job has run to completion but has generated a warning message.
08.	Sev1 Message Occurred. There is a Severity 1 message in the output.
10.	Sev2 Message Occurred. There is a Severity 2 message in the output.
12.	Sev3 Message Occurred. There is a Severity 3 message in the output.
14.	Severe Warning. The job has run to completion but has detected a condition which should be given immediate attention by the user.
52.	Error Message. A run-time or control-card error has occurred, and the job terminated. The cause of the problem will have already been detailed earlier in the SYSLST/SYSPRINT output.

Technical Information

This chapter contains a brief overview of CBLVCAT, installation, discussions on tuning principles, and more detailed explanation of various VSAM topics.

Installation

1. [Introduction](#)
2. [The Distribution Material](#)
3. [The Operating Environment](#)
4. [System Components](#)
5. [System Considerations](#)
6. [Year 2000 Compliance](#)

Introduction

This section provides an overview of the installation of CBLVCAT and is not designed to be used as the only source of reference for product installation (The separate installation guide provided within the distribution material gives full details of **current** installation procedure).

The Distribution Material

For each zSeries mainframe platform, there exists a CBL product .ZIP bundle file containing all CBL software products (including CBLVCAT), and machine readable documentation in PDF format (Install instructions and New Features Document.)

The product binary file is a single file containing object modules, installation jobs, HELP files and other miscellaneous product related files.

Once the installation is complete, refer to the [Introduction](#) chapter of this manual for an explanation on running CBLVCAT under your particular operating system.

The Operating Environment

Processors Supported

The following processors are suitable:

Any **zSeries**, **System/390**, **ES/9000**, **System/370**, or equivalent.

Operating System Support

◊ Any **VSE** type system - **z/VSE**, **VSE/ESA**, **VSE** and **DOS/VS**.

◊ Any **MVS** type system - **z/OS**, **OS/390**, **MVS/ESA**, **MVS/XA**, **MVS**, **OS** and **TSO**.

◊ **VM/CMS** subject to **system considerations**.

DASD Support

The following disk types:

0671, **231x**, **3310**, **3330**, **3340**, **3350**, **3370**, **3375**, **3380**, **3390**, **9332**, **9335**, **9336** and **9345**.

Addressability

CBLVCAT supports 31-bit addressing and is link edited as **AMODE(31)**, **RMODE(24)** on all platforms. Unless required otherwise, CBLVCAT always attempts to utilise buffers in above the 16MB line storage.

System Components

The program code is totally contained within the module **CBLV**.

The small **CBLVCAT**, **CBLVTOC** and **CBLVTOCM** modules, whose only function was to call **CBLV**, are no longer provided. Whilst these may still function, they are no longer maintained by CBL and it is recommended that **CBLV** is used.

Long time users please note that when invocation does function through **CBLVCAT/CBLVTOC**, the **CBLNAME** option for SYSIN will also work, although it is recommended that new jobs use **CBLV** for efficiency.

CBLVCAT Build Level Information

CBLVCAT release and build level is displayed in the report footing. Alternatively, to simply establish the timestamp and build level of CBLVCAT, execute CBLV with no control statements and specify **-V** as a parameter (i.e. in the PARM field).

The build level information is written to SYSLOG/SYSLST. e.g.

```
Build Level=156 2004/01/22 13:18 (Latest change).
```

System Considerations

VSAM and **ICF** catalogs are processed in **read-only** mode. **VTOCs** are also processed read-only, except for the **VSE** modification commands (which may be disabled on request).

CBLVCAT is neither re-entrant or re-usable.

MVS type systems

Install in an authorised library and authorise **CBLV**.

Do not include update the install link edit job to includes any parameters which would result in re-entrant or re-usable load programs.

CBLVCAT's internal organisation is such that parts of the program, which need to be **in storage** most of the time, are on a page boundary relative to the start of the module. Thus, a reduction of the amount of paging is possible by using the **MVS** Link Editor's **ORDER** statement to request a page boundary for the start of the module.

Therefore, the statement **ORDER CBLV(P)** is included in front of the **NAME CBLV(R)** record in the CBL products install link edit job.

VSE type systems

Do not run CBLVCAT from the Shared Virtual Area (SVA).

A programmer logical unit number (SYSnnn) needs to be assigned to SYSIPT in the processing partition.

VM/CMS

The CMS/VSAM product is required for VSAM catalog reports.

CBLVCAT must be run from a DOSLIB for VTOC reports.

If **CBLV** is invoked more than once in the same job, **EXECOS CBLV** should be used. This enables a fresh copy of the program to be loaded at each execution, which is necessary as **CBLV** is neither re-entrant or re-usable.

Year 2000 Compliance

Definition of compliancy for CBLVCAT:

Operates correctly for dates either side of the change to the 21st century.

Operates correctly for both "YR2000 Ready" (enabled) levels of the Operating Systems and earlier releases.

See appropriate IBM documentation for further details regarding enabled levels of IBM software. (e.g. G225-4508-13 "*Special Issue - VSE and Year 2000*" and GC28-1251-05 "*The Year 2000 and 2-Digit Dates*".)

Background information:

The following facts, relating to the Operating Systems, have been taken into account when addressing CBLVCAT's YR2000 compliancy:

Dates in ICF and VSAM Catalogs

ICF catalogs since DFP Ver 2.3.0 have included century information for the dataset's Creation and Expiry dates.

VSAM catalogs under **MVS** will **not** be supported when the system date is beyond 1999.

VSAM catalogs under **VSE** continue to hold the **creation** and **expiry** dates with 2 digits for year. Year 2000 enabled releases of VSAM interpret the century from these dates using a sliding window technique:

Create Date:

Sliding Window in the range -79 to +20 relative to Current Date.

e.g. In 1997, the window is 1997-79 to 1997+20 which equals 1918 to 2017. Therefore, a create date with YY=17 is interpreted as 2017 but create date with YY=18 is interpreted as 1918.

Expiry Date:

Sliding Window in the range 0 to +99 relative to Create Date.

e.g. For 1997/001, window is 1997+0 to 1997+99 which equals 1997 to 2096. Therefore, an expiry date with

YY=17 is interpreted as 2017, with YY=18 is interpreted as 2018. However, an expiry date with YY=98 is interpreted as 1998, with YY=97 is interpreted as 1997 but create date with YY=96 is interpreted as 2096.

Note:

A VSAM definition will fail if the expiration date (TO= parameter) is outside the acceptable range of 0 - 99 years.

Dates in VTOCs

The Year in Creation and Expiry date is held in 1 byte binary, enabling values of 0 to 255 relative to 1900 to be stored.

SAM and VSAM Permanent Files

- ◇ 99/366 is never considered as expired.
- ◇ 99/365 when explicitly specified (VSE DLBL or MVS DD EXPDT for SAM, TO= for VSAM) is considered as never expired.
- ◇ 99/365 when calculated from a **retention period** is considered expired when earlier than or equal to current date.

CBLVCAT Operations Reflecting 4 Digit Year:

LISTVCAT Reports

- ◇ Date of execution in Report Heading.
- ◇ TIMESTMP/DEFINED columns dates.
- ◇ For VSAM Catalog summary reports, the VSAM Data Space TIMESTMP date.

LISTVTOC Reports

- ◇ Date of execution in Report Heading.
- ◇ ACCESSED column dates.
- ◇ CREATED column dates.
- ◇ EXPIRES column dates and interpretation of PERMANENT and EXPD file dates.
- ◇ OLDEST and LATEST dated files in the VTOC in the VTOC summary report.

Subset Options

- ◇ LISTVCAT & LISTVTOC filter HIDATE=/LODATE= dates.
- ◇ LISTVTOC filter HIEXP=/LOEXP= dates.

VSE SAM file MODify

- ◇ EXP=PERM to change the files expiry date to 99/366 (PERMANENT).
- ◇ EXP=TEMP changes the files expiry date to 01/001 (TEMPORARY).

IDCAMS DEFINE Output

- ◇ DEFINE CLUSTER expiry parameter TO(....).

Tuning Principles

1. Approach to ALLOCATION
2. Approach to RECORDSIZE
3. Approach to DATA CFSIZE
4. Approach to INDEX CFSIZE
5. Approach to IMBED/REPLICATE
6. Approach to SPEED v RECOVERY
7. Approach to WRITECHECK
8. Approach to SHAREOPTION
9. Approach to SPANNED
10. Approach to FREESPACE
11. Approach to BUFFERSPACE

Approach to ALLOCATION

CBLVCAT will suggest how much space to allocate based on the current file statistics and your intuitive overrides (see [Summary of Syntax](#) for a list).

CBLVCAT's recommended values take the following into account:

- Enough primary space to accommodate all of the records currently on the file.
- Enough primary space to include growth and free space.
- Enough secondary space to include growth and free space.

Ensuring contiguous allocations is a matter out of CBLVCAT's control. You may, however, request that CBLVCAT reports file extents so that it can be determined when allocations are scattered and non-contiguous (See **CBLVCEXT** in **CBLNAME** and the **CBLVCEXT** option for run time over-ride).

Where large files are concerned, there are other matters over which CBLVCAT has no control (this is because they are yours to choose). It will always try to suggest a primary allocation quantity, which will include enough space for all of the existing file in its tuned state. If the file is too large to be contained on a single volume, it will present a primary allocation value the size of one volume, indicate the number of primary volumes required and then present the remaining space required in the secondary allocation value. You will be armed with enough local knowledge to decide how the total amount of space recommended by CBLVCAT will actually be distributed (See the **CYLMAX** option).

CBLVCAT will never suggest allocation by **RECORDS**. It will always suggest **TRACKS** or **CYLINDERS** for CKD disks and **BLOCKS** for FBA disks. **TRACKS** (or **BLOCKS** which are not **MAX-CA** multiples) are only recommended for files which will occupy considerably less than 1 cylinder and will be such that they result in the best CA size. Incidentally, even VSAM converts your **RECORDS** specification to tracks, cylinders or blocks and stores the converted value in the catalog.

Approach to RECORDSIZE

CBLVCAT will not normally suggest that your maximum record length should be changed. (However, CBLVCAT will make the maximum record length equal to the average record length if the user supplies an **AVLRECL=nn** override value greater than the defined maximum record length). This is strictly a choice which is dictated by the application. However, it will try to point out an inaccurate average record length by considering the amount of file space now occupied by records.

In calculating the average record size, keep in mind that there may be unrecorded or inaccurate statistics in the catalog due to files being open, or to previous abnormal program terminations. Files which are badly in need of reorganisation may also have an adverse impact on CBLVCAT's average record length calculation. **SELCOPY** users could use that product to determine the average length of a loaded file - ring the SELCOPY query desk if assistance is required.

Another area which will negatively affect CBLVCAT's recommendations, is the specification of maximum records sizes which are much greater than the actual records in the file.

Approach to DATA CISIZE

As with other file definition attributes, selecting a Control Interval size is a matter of considering trade-offs.

CBLVCAT will attempt to select a data **CI size** which best utilises the device. However, it does not take into consideration on-line processing unless you specify your intuitive override (see **Summary of Syntax** for a list).

The recommended values try to take the following into account:

1. The operating system, which affects the physical record sizes.
2. The device geometry (track size, **MIN-CA**), which determines the most effective CI sizes.
3. **Free space** for future record insertion. If the file experiences insert activity after it is initially loaded, there should be enough free space to insert at least one record into the CI. If this is not practical due to large record sizes and/or few records per CI, then free space in the CA should compensate.

CBLVCAT will always suggest cylinders (**MAX-CA**) values for large files, or tracks (**MIN-CA**) multiples) for very small files. The suggested value will yield the proper CA size.

When calculating a CI size for a file containing records of varying length, CBLVCAT takes the optimistic approach, calculating the number of records per CI based on the value **CISIZE-10**.

Approach to INDEX CISIZE

CBLVCAT may indicate a change to the index **CI size** of a KSDS. Under most circumstances, IDCAMS will select the same CI size as CBLVCAT, if allowed to do so. There may be situations however, where CBLVCAT and IDCAMS will differ. Here, it is better to adopt CBLVCAT's value.

Unless CBLVCAT sees an index CI size which is too small, the revised value will be due to a change in data component allocation units (from tracks to cylinders or vice-versa). In any case, when an Index CI size change is indicated, it will result in different **buffer** and disk storage requirements.

See the **Additional VSAM Information** section.

Approach to IMBED/REPLICATE

CBLVCAT only tells you to remove **IMBED** and **REPLICATE** if the file is small. The **BUFSP** value will more than compensate for these attributes.

If the file is large, CBLVCAT will not suggest you remove these attributes. The reason for this is that the catalog statistics probably won't reflect the worst conditions in the file's life (e.g. just prior to reorganisation or at the end of the file's growth cycle). Also, if

these attributes are defined, their presence may be justifiable.

See the [Additional VSAM Information](#) section.

Approach to SPEED v RECOVERY

The advantages offered by **SPEED** will always outweigh those offered by **RECOVERY**. CBLVCAT will always recommend that **SPEED** be adopted for any file selected for tuning. It is up to you to decide otherwise.

Approach to WRITECHECK

CBLVCAT will always recommend that you remove **WRITECHECK**.

See heading **NOWRITECHK** in the section [TUNE Block of Tuning Output](#).

Approach to SHAREOPTION

CBLVCAT will only warn you that **SHAREOPTION 4** is in effect and expensive. It is up to you to evaluate whether a more performance enhancing value can be applied (Even with **SHAREOPTION 4**, 100% write integrity cannot be assured).

Approach to SPANNED

If CBLVCAT finds that a file is defined with the **SPANNED** attribute and the CI size is greater than the maximum record length (or if it finds that a CI size adjustment can eliminate the need for the **SPANNED** attribute) it will recommend the attribute is removed.

Approach to FREESPACE

Because of the complexity of the matter, there are a number of factors which affect the way CBLVCAT approaches [free space](#). Generally, CBLVCAT will attempt to increase or decrease free space, based on the statistics it finds in the catalog and the percentage of inserts causing splits. In the adjustment attempt, it will use records per CI and CIs per CA in its justification. It will also warn you when the existing **FRSP** values are incorrect or missing due to arbitrary selections or omissions when the file was first defined.

Any CI free space must allow for at least one record to be inserted. When CBLVCAT sees that the CI is large enough to hold a reasonable number of records, it will recommend a value which will allow enough free space per CI for at least two record insertions. If the records are large, or there are few records per CI, CBLVCAT may suggest zero free space per CI and a corresponding increase in free CIs per CA. No matter what free space values it recommends, you will easily be able to evaluate them (from CBLVCAT's corresponding comment) in terms of the number of free records per CI and free CIs per CA.

When insert activity fluctuates between tuning runs, you may find that sometimes the recommended values also fluctuate. In these instances, checking the comments in the file's IDCAMS **DEFINE** job should give an indication as to how your expectations have been set and how to re-tune to obtain consistent values.

It should be noted that any free space is a general value which, unless extreme measures are taken, applies to the entire file.

See [Growth and Freespace](#) section and **FREESPACE** heading in section [Tuning Output](#) for a description of how to influence freespace recommendations.

Approach to BUFFERSPACE

The best performance is achieved when JCL is used to specify the most suitable number and combination of buffers, whereas, the worst performance is suffered when the IDCAMS minimum default is used. In view of this, CBLVCAT suggests a compromise [buffer space](#) value for file definition. This generalised value will apply to those jobs whose JCL does not take advantage of tailoring the type (data and index) and number of buffers.

When the file is a KSDS, this compromise will yield respectable performance for random access and reasonable (but not super) performance for sequential access. Note that, when specifying a general quantity of buffer space (i.e. **BUFSP** as opposed to **BUFND** and **BUFNI**), VSAM allocates the available buffer space to suit either random or sequential processing. By correctly adjusting the type (index or data) and number of buffers, either by way of JCL, or in the CICS FCT, performance will always be improved (except when **SHR(4)** is in effect).

BUFSP for IDCAMS DEFINE (random processing)

CBLVCAT will recommend a value which will (justifiably) yield good performance for random processing of KSDS and AIX files. The value will result in VSAM allocating two data buffers (the requirement for normal random processing) and at least one buffer for each **level of index** plus 1. This value, which should be specified in the **BUFFERSPACE** parameter of the IDCAMS **DEFINE**, is slightly more than one per level of index, leading to the following:

1. Better performance because more of the index set will be in buffers.
2. In case of file growth another level of index can be accommodated.
3. Every I/O requires the operating system to ensure that a certain number of storage pages are fixed in order to receive the transferred data. Storage pages are 2K or 4K in size. CBLVCAT accounts for this and it may suggest a buffer space value which results in better page usage as well as extra index buffers.
4. If the KSDS is processed sequentially and no JCL buffers are specified, VSAM will initially allocate only one index buffer (all that is required). After ensuring two data buffers (the minimum), the remaining allotted buffer space will be used to allocate additional data buffers. After a whole number of data buffers are allocated, any remainder is given back to index buffers (if sufficient).

The resulting mix of buffers could result in more than the minimum 2 data buffers. This may not be enough to activate read-ahead, but could result in a very significant reduction in I/O to the data component.

5. Where KSDS files are opened implicitly, without being specified via JCL, such as when processing via the PATH or using the IDCAMS **REPRO** naming the data set, reasonable performance can be achieved because the catalog buffer space value recommended by CBLVCAT is better than the IDCAMS default.
6. The KSDS buffer space value recommended by CBLVCAT is correct to achieve respectable performance during direct processing. Once established in the catalog, program or JCL overrides cannot specify less buffer space. In CICS, where files are typically accessed concurrently by more than one user (STRNO is greater than 1), the minimal efficient buffer requirements will be greater than that of the catalog (which is for a single string) and should be attended to in the FCT. If the FCT STRNO value is 1 and insufficient buffers are specified or defaulted, the catalog buffer space will force a better value.
7. VSAM controls the management of LSR pools, not CICS. CICS can only pass the appropriate requests to VSAM. When LSR pools are used, dedicated buffer space is no longer a concern and the value stored in the catalog does not apply.

For ESDS and RRDS files, buffer space for two data buffers is recommended (VSAM's minimum). The justification for this action is covered under the next item.

BUFSP for JCL override (sequential processing)

When any file is processed sequentially, the speed at which the file can be processed depends on a number of factors (e.g. CI size, CIs per CA, Number of allocations/extents, Number of CI and CA **splits** and the Job priority). However the most crucial performance factor is the number of data buffers. Generally, the more data buffers are available, the faster the file is processed.

Re-iterating that the best place to specify buffer space is in JCL, CBLVCAT will suggest JCL values to override the value stored in the catalog. These data buffer values are designed to yield one of three performance levels called **FAST**, **URGENT** and **TURBO**. Where applicable, CBLVCAT will warn you when using the **TURBO** value could impact the rest of your system. In this case, the option should be used with caution.

In summary, where tight control of buffer space is not practiced and controlled in JCL, CBLVCAT will eliminate the guesswork in determining a BUFSP value which is effective.

See also the [Additional VSAM Information](#).

Tuning for IMS/DL1 Databases

1. [IMS/DL1 Data Sets](#)
2. [IMS/DL1 Database Processing](#)
3. [Database Re-organisation](#)
4. [Buffer Pool Allocation](#)

IMS and DL1 are VSAM applications and are subject to the same problems and performance issues encountered by any other VSAM application. These are primarily related to allocation and use of VSAM buffers.

For IMS/DL1, LSR buffer pools should be specified in a file with DDNAME=DFSVSAMP (VSAM Parameters). If DFSVSAMP is omitted, the default values are used which are most likely not appropriate to the VSAM file.

To investigate:

- View VSAM parameters in the DFSVSAMP data set.
- VCAT TUNE listing of all associated VSAM files in the database (may be several).

To fix:

- Reorganise VSAM files according to VCAT's recommendations.
- Add buffer information to definition statements in DFSVSAMP.

IMS/DL1 Data Sets

In general, IMS/DL1 databases are comprised of a number of VSAM ESDS and/or VSAM KSDS data sets.

- Databases that have indexes (HIDAM) store index records within KSDS data sets wherein records tend to be quite short.
- The data records of an IMS/DL1 database are generally stored within VSAM ESDS data sets.

Since IMS/DL1 is a VSAM application, processing data from an IMS/DL1 database requires VSAM buffers which, for both batch and on-line CICS processes, are specified via LSR.

For MVS, the LSR buffer pool is referenced by a data set with the DDname DFSVSAMP (VSAM Parameters). Omission of a DFSVSAMP file is not advised as the default buffer allocation is likely to be inappropriate.

Multiple databases may be referenced by any single PSB. Thus, for any IMS/DL1 batch or on-line process, the number, size and type of buffers to be defined must take into account the geometry of each VSAM data set involved to allow maximum efficiency.

IMS/DL1 Database Processing

IMS/DL1 database processing is generally made more efficient by performing the following:

- Re-organisation of the databases so that associated data segments exist in contiguous control intervals.
- Ensure that the buffer pool allocation defined for individual jobs best matches the type of processing to be actioned on the database.
- In extreme cases only, re-organisation of the IMS/DL1 database VSAM data sets.

Database Re-organisation

Where a job's performance has deteriorated over a period of time, the most likely cause is poor organisation of the database's data records within the VSAM data sets. This can occur as record inserts are made throughout the database.

Even on sequential processing of a database, where related data segments are located on non-contiguous CIs throughout the VSAM file, extra EXCPs are required to load the VSAM buffer pools with CIs for contiguous segments that would otherwise exist in CIs already loaded in the buffer pool.

Similarly, record inserts may eventually cause a CI or CA split in the indexing of a HIDAM database. The effects of this may be that newly created CIs or CAs contain an excess amount of freespace and so more CIs need to be loaded to process the same amount of data segments as before the split occurred.

A database re-organisation will restore order to the data records and so improve processing efficiency.

Buffer Pool Allocation

The following basic principles are true for all efficient VSAM data set processing.

Sequential Processing

For sequential processing, efficiency is improved by allocating more data buffers.

If possible, define a number of buffers to allow VSAM to perform a read ahead of Data CIs. This occurs for VSAM sequential processing where enough free buffers exist that an entire CA may be read into the buffers in a single I/O. i.e. define a sub-pool of buffers numbering CIs per CA.
e.g. If CISIZE = 4KB and CASIZE = 720KB, then allocate 180 * 4KB buffers.

Therefore, for each database referenced define a sub-pool of buffers numbering CIs per CA. If the buffer sub-pool is shared between database files then even more data buffers would need to be defined.

The CI/CA value is displayed as part of a standard CBLVCAT LISTVCAT report.

Furthermore, CBLVCAT's TUNE function may be used to help define the optimum size and number of LSR buffers for sequential input of an IMS/DL1 database.

CBLVCAT's VSAM data set tuning offers general recommendations based on further record insertions to the data set, current file statistics (number of records, record size, CI and CA splits, etc.) and user supplied overrides.

Most importantly in this discussion, CBLVCAT specifies a choice of JCL overrides for BUFND that may be used to speed up sequential processing. These overrides may equally be applied to buffer sub-pools within the DFSVSAMP data set.

By enforcing restrictions on the CBLVCAT TUNE, the recommended VSAM parameters will be unchanged and the BUFND overrides will reflect the file in its current form. This is achieved by coding the following:

```
◇ CFSIZE=KEEP
◇ GROWTH=0
◇ AVLRECL=KEEP
◇ MAXLRECL=KEEP
```

The BUFND overrides are based on the tuned CFSIZE and BUFFERSPACE values. Unless these current values are flagged with an asterisk ("*") in the report output, it is unlikely that there is an urgent requirement to re-organise the VSAM files. In particular, re-organising the files with a new CFSIZE would require examination and possible update to buffer allocations for other IMS/DL1 jobs on the same database.

Using TUNE option CFSIZE=KEEP is recommended so that CBLVCAT's tuning recommendations are based on the existing CFSIZE only.

Because we are interested in input only, we do not want CBLVCAT to make tuning recommendations based on further record insertions, therefore GROWTH=0 should be specified.

Direct Processing (KSDS only)

Define at least as many Index buffers equal to the number of index levels + 1 for the sequence set. This is necessary to avoid input of the top level index for every direct read which would cause disk thrashing. Specifying more index buffers will increase the likelihood that the required index CIs are already in storage and so reduce the number of EXCPs.

If it is known that consecutive direct input requests are likely to involve records that are located in close proximity to each other, then definition of multiple data buffers may be of benefit. However, in most cases, comparatively few data buffers need to be defined.

Because of the different buffer requirements for each type of processing, it is general good practice to define separate DFSVSAMP data sets containing different buffer pool allocations appropriate to the type of processing and geometry of the VSAM data sets involved.

Additional VSAM Information

1. MIN-CA and MAX-CA
2. CFSIZE
3. CFSIZE
4. SECONDARY ALLOCATION
5. IMBED and REPLICATE
6. FREESPACE
7. SPLITS
8. KEY COMPRESSION
9. ALTERNATE INDEX and PATH
10. LEVELS OF INDEX
11. BUFFER SPACE
 - ◆ BUFSP for Sequential Processing
 - ◆ BUFSP for Direct Processing
 - ◆ BUFSP for Sequential and Direct
12. SPEED v RECOVERY

MIN-CA and MAX-CA

These terms, common to both CKD and FBA devices, describe VSAM's use of the track and cylinder concept to optimise performance and to control allocation.

MIN-CA replaces the term 'track'.

MAX-CA replaces the term 'cylinder'.

MIN-CA and MAX-CA are units of allocation, the size of which depends upon the device being used :-

DASD	MIN-CA		MAX-CA	
	BLOCKS	BYTES	BLOCKS	BYTES
0671	63	31.5k	504	252k
3310	32	16k	352	176k

3330	-	10k - 12k *	-	190k - 228k *
3340	-	6k - 8k *	-	72k - 96k *
3350	-	13.5k - 18k *	-	405k - 540k *
3370	62	31k	744	372k
3375	-	20k - 28k *	-	240k - 336k *
3380	-	32k - 44k *	-	480k - 660k *
3390	-	23k - 52k *	-	345k - 780k *
9332	73	36.5k	292	146k
9335	71	35.5k	426	213k
9336	64	32k	960	480k
9345	-	20k - 44k *	-	300k - 660k *

* For **CKD** devices, depends on the size and number of physical records.

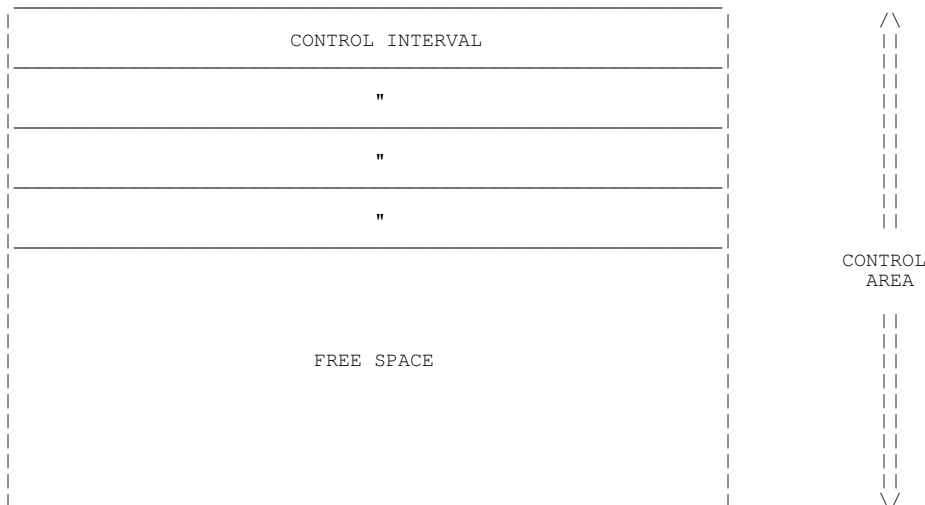
Performance

Is optimised if there are an integral number of control areas occupying a MAX-CA. CBLVCAT's tuning takes this into account.

CASIZE

The CONTROL AREA size is selected by AMS from the primary and secondary space values (i.e. TRACKS/CYLINDERS/RECORDS). AMS checks the smaller of the primary and secondary space values against the DASD device's **MAX-CA** size. If the smaller space quantity is less than or equal to the max-ca, the CA is set equal to the smallest space quantity (rounded up by **MIN-CA** value with FBA). If the smaller space quantity is greater than the max-ca, the CA size is set to the MAX-CA value.

VSAM acquires space in increments of control areas.



Performance

Is optimised if there are an integral number of control areas occupying a **MAX-CA**. CBLVCAT's tuning takes this into account.

CISIZE

The CONTROL INTERVAL is VSAM's logical record length.

It holds as many physical records as will fit (non-spanned.) Each CI contains VSAM control information in the last few bytes.

- 4 bytes of CIDE (per CI)
- 3 bytes of RDF (per different record length in the CI).
- 3 bytes of RDF (count of adjacent records of same length).

Therefore, for more than one record per CI, fixed length records have 10 bytes of control information and variable length records have 10+ bytes of control information.

FIXED LENGTH RECORDS

Rec 1	Rec 2	Rec 3	Rec 4	FREE SPACE	RDF #	RDF *	CIDF
-------	-------	-------	-------	---------------	----------	----------	------

VARIABLE LENGTH RECORDS

Rec 1	Rec 2	Rec 3	Rec 4	Rec 5	FREE SPACE	RDF 5 *	RDF 4 *	RDF 1 #	RDF 1 *	CIDF
-------	-------	-------	-------	-------	---------------	---------------	---------------	---------------	---------------	------

= no. of adjacent records of same length.
 * = record length.

A Control Interval (like SAM BLKSIZE) is the unit of transmission between DASD and main storage.

The size of a CI must be a multiple of 512 bytes.

Data CI's include all multiples of 512 up to 8192, then up to 32768 in multiples of 2048.

INDEX CI's may only contain one physical record so the range available depends on the operating system:-

- **DOS/VS** 512, 1024, 2048 or 4096.
- **DOS/VSE** all multiples of 512 up to 8192.
- **VSE/SP (or higher)** all multiples of 512 up to 8192.
- **MVS (prior to DFP 2.2)** 512, 1024, 2048 or 4096
- **MVS (DFP 2.2 onwards)** all multiples of 512 up to 8192 and all multiples of 2048 up to 32768

AMS will round up for non-multiples of 512/8192.

A Data CI must be large enough to hold a data record of the maximum size specified in the **RECORDSIZE** parameter (Exception to this being **SPANNED** records).

Performance

For **sequential processing**, large data CI's improve performance by allowing more data to be transferred by one execute channel program (EXCP) operation.

For **direct processing**, large data CI's tend to reduce performance as unnecessary data is transferred to and from primary storage.

Small data CI's tend to cause **large index** CI's which results in more data CI's per data CA, requiring more index entries in each sequence set index record.

SECONDARY ALLOCATION

The Secondary allocation, is the amount of additional space to be given to the file when the primary allocation becomes full. The value is specified at file definition time.

The maximum number of **extents** supported by VSAM is 123 (except for reusable non-ICF files where the maximum is 16 per volume). Files in ICF catalogs can have 123 **extents**, regardless of the **REUSE** attribute. If the Dataspace is fragmented (not enough contiguous space available), the **primary allocation** can take more than one extent. This will reduce the number of possible secondary allocations. If a file is extended onto a candidate volume a Primary allocation is acquired and not a Secondary allocation.

An allocation (primary/secondary) is carried out on a "best-fit" basis. This means that if the allocation quantity can be located within a single contiguous extent, it will take place in the closest fitting available space. If enough contiguous space is not available, a search is made to see if the allocation amount can be satisfied in more than one extent, but **ever more than 5 extents** (Please note that some releases of DFP on MVS systems may require contiguous allocation extents when allocation is by tracks. This means that an allocation must be satisfied in a single extent).

Performance

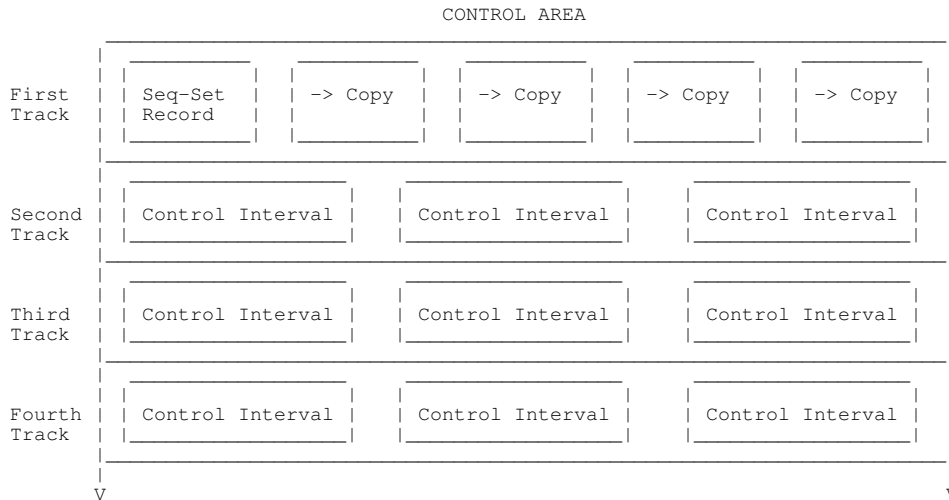
Every time VSAM is required to acquire more space for a secondary allocation, it needs to suspend activity on the processing program and find room to expand the file. This can take a considerable amount of time, especially for on-line applications.

A small **secondary allocation**, for significantly large files that need to expand, will lead to an unrealistic number of secondary extents. This can cause a performance degradation.

If the small secondary allocation is less than a **MAX-CA** then it will impact performances by resulting in a small CA size.

IMBED v REPLICATE

The **IMBED** attribute means that the file is defined to have the lowest level of the index (the sequence set) placed within the data component. It is placed in the first track of each control area for which it exists and is automatically replicated on this track.



The **REPLICATE** attribute means that the file is defined to have the index CI's repeated as many times as will fit on a track (within the **index component**).

Performance

Imbedding the sequence set within the data reduces access arm movement for both sequential or direct processing.

Index set replication decreases search time when reading index set records directly.

If many index buffers are available, index options have less effect

IMBED is very costly for disk space if the CA size is small. (e.g. if **secondary allocation** is 2 tracks, then **CASIZE** is fixed at 2 tracks and **IMBED** would use 50 per cent of the data area).

FREESPACE

For KSDS and AIX only, can be requested at two levels:

FRSPCI

A percentage of each control interval can be left free (in bytes). VSAM **does not** round up to a whole number of records.

FRSPCA

A percentage of control intervals within each control area can be left free. For **VSE** the space reserved is rounded up to the next whole number (unless zero is specified), whereas **MVS** rounds down to the next whole number (or zero).

Freespace is left when the file is loaded and also when it is extended. (i.e. when **CI/CA splits** occur when in sequential insertion mode).

CI freespace should be as large as the design insertion level. (i.e. estimate the percentage of additions to be made between file reorganisations). Beware of Freespace definitions which give **unusable** areas within a CI. (It is possible to allocate freespace that is not large enough to contain a single record).

Freespace may be altered after the file is loaded. To take full advantage of mass insertion, **ALTER** Freespace to (0 0) after the load.

An alternate method of handling an uneven pattern of additions, is to define the file as a key-range, leaving room for expansion at the end of each range of keys.

For **FREESPACE(100 100)**, VSAM writes one record to each CI and one CI to a CA.

Performance

For **direct** insertions, make the CI freespace larger than the CA freespace.

The greater the freespace specification, the more DASD space is required. For **sequential processing**, more I/O operations (with more system overhead) are required to process the same number of records.

A bad combination of **CISIZ**, **RECORDSIZE** and **FREESPACE** can cause poor sequential performance if much of the free space is unusable.

Too much freespace could increase the number of index levels, which could increase run time for **direct processing**.

Too little freespace can cause an excess of (time-consuming) **CI/CA splits**. After a split, extra time is required for **sequential** processing because the records are not in physical sequence.

For **direct** processing, CA splits can increase seek time (Another factor is the additional VSAM overhead required to do the split).

FREESPACE Recommendations

CBLVCAT bases its free space recommendations in line with the catalog statistics. If the information is indicative of the file's normal behaviour patterns, then the values it recommends will be correct.

If the information is not indicative of the file's behaviour patterns, then you can influence CBLVCAT to arrive at the correct recommendations through the use of the **TUNE** sub-parameters. See **Tuning Considerations** in **Guide to VSAM Tuning** for details.

The following items will help you to decide when and how to adjust CBLVCAT's free space recommendations:

- ◊ When the file being tuned has just been loaded, the catalog will not reflect the amount of insert activity. **RECORDS=nnn** and **GROWTH=nn** can be used to adjust the free space required.

The influencing values should represent the number of records to be loaded, together with the intended growth, due to record inserts, before the next file reorganisation.

- ◊ When the file being tuned never has records added to it by way of insert, the catalog will not show insert activity, but CBLVCAT should be assured of this by specifying **GROWTH=0**.

These types of files are usually used as table values by your applications. Usually, they are updated as a part of the initial load procedure. In this case, you may also want to use the **RECORDS=nnn** sub-parameter to influence the allocation recommendation.

- ◊ When the file is in use (opened) by another program, such as CICS, the catalog statistics may not be reliable. This is because they will only be updated when the file is closed. Running CBLVCAT when CICS is down, or when the file is closed, will get the correct results. However, the use of **RECORDS=nnn** and **GROWTH=nn** will also achieve the desired result.

- ◊ When the insert activity to the file is such that inserts are **evenly distributed** throughout the file, you may wish to **increase** the amount of CI **free space** and decrease the amount of CA **free space**.

To do this, **FRSPCI** and **FRSPCA** may be used. However, make sure you compare results, before and after, to see what other recommendations may have changed. The best way to determine that this override is required after file tuning, is the appearance of excessive CI **splits** during normal monitoring.

- ◊ When the insert activity to the file is such that inserts occur **in pockets** around the file, you may wish to **decrease** the amount of CI **free space** and increase the amount of CA **free space**.

To do this, **FRSPCI** and **FRSPCA** may be used. However, make sure you compare results, before and after, to see what other recommendations may have changed. This kind of insert activity tends to be more common. The best way to determine that this override is required after file tuning, is the appearance of excessive CA **splits** during normal monitoring.

If you decide to override CBLVCAT's free space recommendations, without the use of the influencing sub-parameters, make sure you fully understand the consequences. Incorrect choices will lead to any combination of dead and wasted space, poor performance, excessive CI splits and especially excessive CA splits.

If you decide to adopt CBLVCAT's recommended free space values, you do not have to wait until the file is backed up, re-defined and re-loaded. You can use the IDCAMS **ALTER** command to update the catalog entry immediately. This does not mean, however, that the free space attributes will become immediately effective. The file still needs to be reloaded for the free space percentages to take effect. Nevertheless, during split processing VSAM does apply freespace values generated by the IDCAMS **ALTER** command.

SPLITS

A Control Interval split occurs if there is insufficient **free space** available in the CI for a new record (or to extend an existing record). One of the free CI's within the same CA will be used.

A Control Area split occurs if there are no free CI's within a CA. The new CA is allocated at the end of the existing allocated space, otherwise secondary allocation takes place and the split CA is placed in the secondary extent.

The rules for CI SPLITS and CA SPLITS are as follows:-

Sequential Processing CI SPLIT

If the insert is in the middle of the CI, the records with higher keys are moved to the free CI. The insert and the records with lower keys remain in the old CI. If the insert is at the logical end of the CI, the inserted record goes to the free CI.

If the insert is not in the last logical CI, all CIs after the split CI are moved to the new CA. If the insert is within the last logical CI, that CI is moved to the new CA. If the insert is at the end of the last logical CI, the inserted record is placed into the new CA.

Half the records (those with the higher keys) in the CI are moved into the new CI. The new record is inserted (in key sequence) into the CI to which it belongs.

Half the CIs (those with the higher keys) are moved to the new CA. Insertion then occurs through regular CI split processing, using the newly created free space CIs.

This is a technique automatically used by VSAM when, for instance, a file is opened for output. Mass insertion reserves defined **FREESPACE** and **does not** perform CI/CA splits. Input records must therefore be sorted in ascending key value.

CA splits can cause severe system or terminal response degradation

Reloading the file removes CI and CA splits with an inevitable improvement in DASD usage and response time.

KEY COMPRESSION

Within the index component, and whenever possible, VSAM will automatically compress a key in order to minimise space used.

Characters from both the front and back of a key are removed if they are redundant when comparing the current entry key with the key immediately before and after it.

The following key sequences would be compressed:

12345ABCDE67890	12345ABCDE67890
12345ABCDE67891	12346ABCDE67890
12345ABCDE67892	12347ABCDE67890
12345ABCDE67893	12348ABCDE67890
12345ABCDE67894	12349ABCDE67890

The following key sequence would not be compressed:

12345ABCDE67890
22345ABCDE67891
32345ABCDE67892
42345ABCDE67893
52345ABCDE67894

ALTERNATE INDEX and PATH

AIX

An alternate index (or alternate indices) can be built by VSAM over a KSDS or ESDS dataset.

An alternate index allows the base cluster to be accessed via an alternate key.

Alternate keys, unlike the prime key of a KSDS, do not have to contain unique values.

The base cluster has to be defined and loaded for the alternate index to be defined and built via AMS commands.

VSAM can be requested to maintain the alternate index so that any changes to the base cluster are reflected in the alternate index. The AIX is then part of the UPGRADE SET. CBLVCAT shows this by displaying as **AIX (U)**.

The data portion of the **AIX** consists of:-

- ◇ 5 bytes of system header information.
- ◇ The alternate key
- ◇ At least one prime key

[illegible]

If the AIX is opened the data portion above is read.

PATH

To access a base cluster through the alternate index a PATH must be defined.

Referencing the PATH name causes the ALTERNATE INDEX and its related base cluster to be referenced. Opening the PATH entry name causes the base cluster to be processed using the alternate key.

The PATH relates to, or sets up, an association between the AIX and the BASE and is where the **UPDATE/NOUPDATE** option is made.

Performance

An AIX should be treated as a KSDS.

Alternate indices, which are part of the upgrade set, must be updated to reflect changes to the base cluster. This will obviously cause additions/deletions to take longer to process than would otherwise be the case.

If a path is opened, the upgrade set will be maintained if the path has been defined as **UPDATE**. If the path has the attribute **NOUPDATE** the upgrade set will not be maintained.

Extra **bufferspace** (i.e. more than 2 data buffers and 1 index buffer) can be allocated to an alternate index and will be used if the access is through the alternate index. If the alternate index is being processed as part of the upgrade set, the minimum buffer space will be used.

LEVELS OF INDEX

In each record of a KSDS, there is a fixed length, fixed position field that contains a unique value for each record. This is the key field on which the index is built.

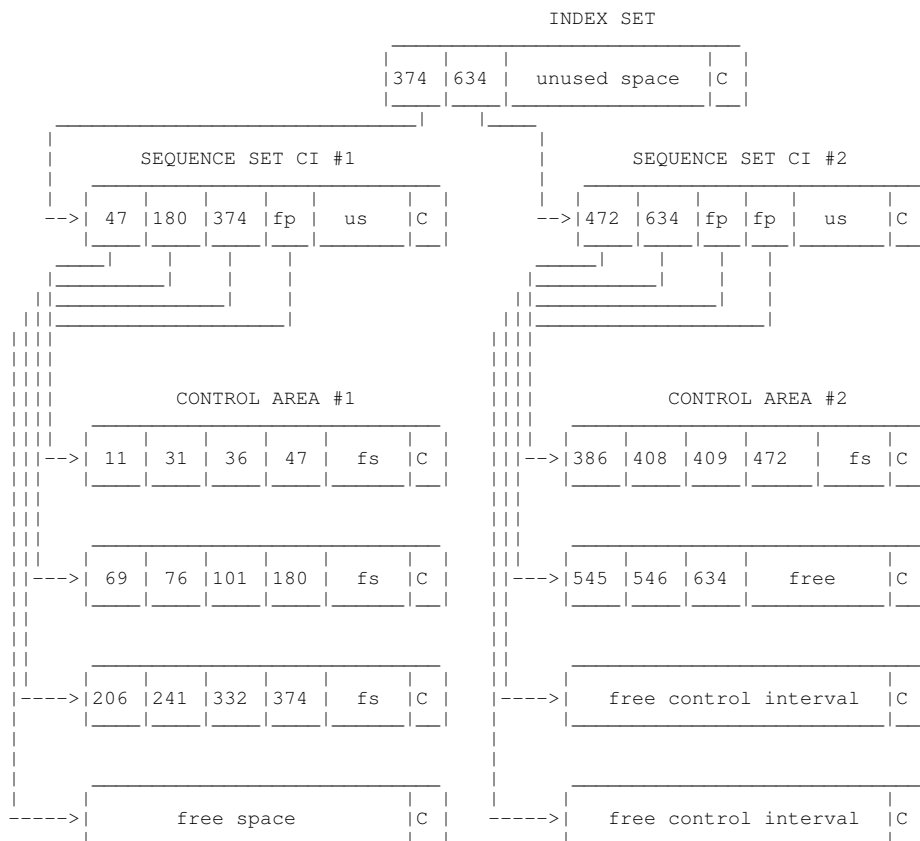
The index consists of :-

- The sequence set (the lowest level).
- The index set (all other levels).

The sequence set index record contains an entry for each CI in its related CA.

The entries hold the highest key (compressed) that can be held on that CI, plus a pointer to that CI.

The higher levels of index in the index set, are built as required by VSAM.



C = control fields (RDF's, CIDE)	us = Unused space
fs = free space (FREESPACE def.)	fp = pointer to free CI

When accessing the index, only one CI at each level is accessed. VSAM will therefore build further levels of the index until the highest level consists of a single CI.

Factors that govern the number of index levels include :-

- key length
- key compression
- freespace
- index csize

When Index **CISIZE** is left to VSAM, the calculated index CISIZE will be large enough to hold as many entries as there are data CIs in a CA (**Beware of large keys as the anticipated compression may not materialise**).

At least two levels of index will be required if the file occupies more than one data CA.

BUFFER SPACE

Buffer Space (**BUFSP**) is a quantity of computer memory used by VSAM for the transfer of records (in units of Control intervals), between disk and computer storage. The amount of reserved space can be specified in three ways:

1. **In the catalog when the file is defined.**
This will be the minimum amount of storage which can be reserved. The program ACB, or JCL, can be used to increase the amount of buffer space, but never to decrease it.
2. **In the program, via the ACB (Access Method Control Block).**
This describes the file's characteristics to VSAM. The buffer requirements must result in a **BUFSP** value which is greater than or equal to the value specified in the catalog. If this is not the case, then the catalog value will be used instead.
3. **In the operating system JCL.**
This is the Job Control Language of the operating system. The buffer space requirements specified override the value specified in the program's ACB, but must be greater than or equal to the value specified in the catalog. If this is not the case, then the catalog value will be used instead.

The optimum amount of buffer space VSAM is to use depends mostly on how the file will be processed (i.e. sequentially or randomly), and the number of **index levels** required to point to the data.

For all files, CBLVCAT will recommend a **BUFSP** value which is best **for direct processing**.

BUFSP for Sequential Processing

For **ESDS** and **RRDS** files, all buffer space by definition is used for data.

For a **KSDS**, space for just one index buffer is required by VSAM and the remaining buffer space is used for data buffers.

Any additional data buffers available are used by VSAM in two ways:

1. By reading more than one control interval at a time.
i.e. by building a CCW chain to read several CIs with one I/O initiation (or EXCP).
2. By initiating the next read in advance.
i.e. when data is returned to the program by VSAM after an EXCP, the next EXCP is issued immediately. This is so that the next EXCP can take place whilst the program is dealing with the data buffers filled by the first EXCP. This uses a VSAM feature called **Lookahead Read**.

It should be noted that different versions of VSAM give different priorities to these 2 buffering techniques.

Sequential processing is **significantly improved** by using a JCL override on the **BUFSP** value sufficient for several data buffers, plus 1 index buffer.

The override of **BUFSP** for sequential processing is achieved via **JCL**.

Pre **VSE/SP 4.1** users should code **BUFSP=nnnn** on the **DLBL** statement. If there are less than 4 data buffers available, VSAM will use I/O command chaining to fill all the buffers and then return to the program. When 4 or more data buffers are available, VSAM will fill two or more buffers, return control to the program and initiate the I/O operation to fill the remaining buffers. Thus, **Lookahead Read** is achieved. Use of more than four or five data buffers should be evaluated carefully in relation to the demanding effect it will have on the rest of the system.

MVS users and **VSE** users from **VSE/SP 4.1** have the advantage of being able to supply **BUFND=5** on the **DD** statement (**DLBL** for **VSE**) instead. this avoids the need to calculate or transcribe large numbers.

The advantage of defining a large **BUFSP** for sequential programming, however, has to be balanced against possible extra virtual storage demands, paging, and CPU monopolisation.

BUFSP for Direct Processing

If you decide to implement CBLVCAT's recommended **BUFSP** value to define the file, the **BUFSP** value is correct for random processing of KSDS files.

No further special action is required for programs which access **KSDS** files randomly.

For **ESDS** and **RRDS** files, no index exists, so the buffer space reserved is only for 2 Data CIs, which will suffice for good performance.

Additional buffer space should be specified via JCL overrides and will be used to accommodate additional Data CIs.

ESDS files, which are sequential in nature, can be processed by programs in random fashion through the use of RBA (Relative Byte Address).

RRDS files, which are random in nature, can be processed sequentially. In light of this, you should use JCL to specify additional buffers as required. Otherwise, you can adjust the **DEFINE** value to suit the mode of processing when it is **always** the same.

For **KSDS** files, VSAM requires two data buffers, and a minimum of one index buffer. For **efficient** processing, 1 index buffer per level of index plus 1 is required.

If additional buffer space is available, VSAM uses it to accommodate more index CIs. While this may save the occasional I/O for an index CI already in storage, it is possible to cause an undesired increase in CPU usage due to increased storage demands. It also results in longer instruction path lengths which are required to look for the index record, regardless of whether it is in storage or not.

Bear in mind that updates will require a refresh of buffers.

The KSDS index has a hierarchical organisation expressed in terms of index levels. The top level always contains one CI. The bottom level is called the **Sequence Set** and consists of one record per data control area, normally a cylinder or **MAX-CA**.

Thus, all but small KSDS files will have at least two **index levels** (i.e. files occupying more than one control area).

Each level consists of pointers to the next level down. As soon as the top level index requires more pointers than it is able to hold in **one CI**, it is split into 2 CIs and a new top level of index is created, initially having only 2 pointers. And so it goes on.

It is **extremely important** to ensure that there is at least one index buffer per level of index when a KSDS is processed randomly.

Consider a large file which has 275 index records spread over three levels and where the data resides in 220 control areas.

The bottom index level (the sequence set) contains 220 records (one per data control area), the top level contains 1 (by definition) and so the second, or middle level contains the remaining 54.

If there is only one index buffer, three index reads will **always** be required per record retrieved (one per level). This **must** be avoided.

If there are three index buffers, the top level index is read once only and the number of index reads per retrieval ranges from 0 to 2, depending on the contents of the buffers for the other two index levels. Usually it will be 2.

Increasing buffer space for the above example will result in more of the second level available in storage, giving the advantage of reducing index reads. However, the penalty of the **additional CPU overhead**, due to checking if an index record is in storage, is incurred whether the index record is found or not. This can outweigh all the advantages.

Use of 56 index buffers would allow 1 for the top level, 54 for the 2nd level, and 1 for the bottom level. This would result in 0 or 1 index read per record retrieved. Usually 1. But is the trade-off in CPU time and storage cost worth it ?

CBLVCAT's compromise is to cater for 1 extra index level, which allows a jump to the next index level after further inserts, without degradation of efficiency.

BUFSP for Sequential and Direct Processing

When files are opened for **sequential** and **direct** processing, VSAM will default to using the buffer space in the same way as it does for sequential processing (i.e. 1 index buffer and the remainder for data buffers).

If processing is predominantly **sequential** then this is satisfactory. Benefit **may** be gained by increasing the buffer space to allow another data buffer, however, the look-ahead sequential reads are wasted every time a **direct** read occurs. As we already have 2 data buffers, there is doubt as to whether this change would be of value.

If processing is predominantly **Direct** then VSAM's assumption is wrong. VSAM will default to one index buffer only and so, without an override, you will not get maximum efficiency.

For **MVS**, the required override is to increase the number of index buffers to (No. of index levels)+1, using **BUFNI=n** in the JCL.

Buffer space should not be modified or adjusted because the definition, which should be in the catalog for this file, is either correct, or will be recommended correctly for predominantly **direct processing**.

BUFND should not be modified because VSAM will use the remainder as data buffers anyway.

Obedying the **BUFNI** = (No. of index levels)+1, VSAM will then operate at maximum efficiency for direct processing.

For pre **VSE/SP 4.1**, the override of **BUFNI** is not currently supported within its JCL, so the inefficiency should be corrected by introducing the required **BUFNI** = (No. of index levels)+1 into the program's ACB.

SPEED v RECOVERY

The **SPEED** and **RECOVERY** options allow the user to specify how much preformatting is done when a file is loaded.

RECOVERY

RECOVERY will cause VSAM to preformat a control area in advance and to write an EOF record on the CA. If the load fails, AMS Verify can be used to locate the EOF record and the rest of the records can be added in extend mode. This assumes that the loading program is smart enough to continue where it left off.

IDCAMS **REPRO** and most other load programs do not offer a restart facility.

SPEED

No preformatting is done. If the load fails, all the records will have to be reloaded, after the file has been deleted and re-defined.

Performance

SPEED only has an effect on performance at load time. After the file has been loaded, all future extensions will be done in recovery mode.

Glossary of Terms

ACB	Access Method Control Block. (VSAM)
AIX	Alternate IndeX (see Additional VSAM Information).
ALIAS	An alternate name for a Catalog or NONVSAM file (OS systems).
AMS	Access Method Services.
ASSOC	File ASSOCiation (AIX, PATH etc).
BCS	Basic Catalog Structure (part of ICF Catalog).
BLKSIZE	The physical size of records.
CA	Control Area. A number of Control Intervals are grouped together to make up a Control Area. (see Additional VSAM Information).
CAP Block	CBLVCAT tuning capacity block.
CATALOG	The VSAM directory.
CI	Control Interval A VSAM storage unit to contain records, similar to to a block in other access methods. It also contains control information which VSAM uses and which you do not see. (see Additional VSAM Information).
CI/CA	The number of Control Intervals in a Control Area.
CICS	Customer Information Control System IBM software program.
CISIZE	Control Interval SIZE.
CKD	Count Key Data A type of disk architecture.
CLUSTER	VSAM maintains files in structures called CLUSTERS. A CLUSTER is maintained on disk in one of two ways:- ♦ For non-ICF environments the CLUSTER lives in an area of disk reserved for VSAM called a VSAM DATA SPACE. The clusters within the SPACE are under control of a USER CATALOG and a MASTER CATALOG. ♦ For ICF environments the CLUSTERS are under the control of an ICF Catalog which is composed of two parts, the BCS and the VVDS. The VVDS contains the information such as file characteristics. There is no concept of VSAM SPACE in this environment. See the relevant IBM documentation for more information.
CMS	Conversational Monitoring System Operating System component of VM.
CMS/VSAM	IBM software program.
CRA	Catalog Recovery Area
DA	Direct Access
DASD	Direct Access Storage Device A disk.

DBD	DataBase Descriptor
DF/EF	Data Facility Extended Function Used with ICF Catalogs.
DDNAME	'Data Set label' in MVS systems.
DLBL	'Disk label information' in VSE systems.
DL/I	Data Language/1 Hierarchical database system for VSE (c/f IMS for MVS).
DOS	Disk Operating System
DOS/VS	Disk Operating System/Virtual Storage
DOS/VSE	Disk Operating System/Virtual Storage Extended.
EOF	End of File
ESA	Enterprise System Architecture
ESDS	Entry Sequence DataSet A VSAM file structure analogous to sequential files. ESDS files can be processed sequentially from start to end, or records can be accessed directly by supplying the Relative Byte Address (RBA) of the record.
EXEC	A CMS filetype used to store a set of statements.
EXCPS	EXecute Channel Programs (I/O)
FBA	Fixed Block Architecture A type of disk architecture.
FCT	File Control Table A component of CICS.
FILEDEF	CMS terminology for 'file label'.
GDG	Generation Data Group
ICF	Integrated Catalog Facility A Catalog consists of a BCS and one or more VVDS.
ICFCAT	VSAM Catalog on ICF
IDCAMS	IBM utility program for VSAM Catalogs.
IJSYSCT	VSE DLBL for the VSAM Master Catalog.
IJSYSUC	VSE DLBL for the VSAM Job Catalog.
IMS	Information Management System Used to mean IMS/DB. A hierarchical database for MVS (c/f DL/I for VSE).
INDEX	The index extent of a VSAM/ISAM file.

ISAM	Index Sequential Access Method
IX	Index component of AIX or KSDS file.
IXL	Index Levels (see Additional VSAM Information).
JCL	Job Control Language
JCL Block	CBLVCAT tuning JCL block.
JOBCAT	MVS Job Catalog.
KSDS	Key Sequence DataSet A VSAM file structure made up of 2 components, an INDEX component and a DATA component. Each component is a separate file.
LDS	Linear DataSets Consists of a long stream of bytes and not considered to have records.
MASTCAT	VSAM master Catalog
MAX-CA	MAXimum Control Area size (see Additional VSAM Information).
MIN-CA	MINimum Control Area size (see Additional VSAM Information).
MVS	Multiple Virtual Storage (operating system).
MVS systems	Generic term for OS, OS/VS, MVS, MVS/XA, MVS/ESA and OS/390.
NONVSAM	MVS files which do not occupy space within the Catalog.
NSPND	Non SPaNneD file.
OS	Operating System.
OS/VS	Operating System/Virtual Storage.
OS/390	Open integrated Server Operating System Environment. The latest release of MVS.
PAGESP	MVS system PAGE SPace.
PRIME	The PRIME data extent of VSAM or ISAM file.
RBA	Relative Byte Address.
RDF	Record Descriptor Field.
REORG	A file reorganisation.
REPRO	An IBM utility program.
RRDS	

Relative Record DataSet.

A VSAM file structure having a "pigeon hole" or slot structure. Each slot is associated with a Relative Record Number. It can be processed sequentially, or randomly by its relative record number.

SAM

Sequential Access Method

SEOF

Software End Of File.

SEV Block

CBLVCAT tuning block containing SEVerity messages.

SMS

System Managed Storage

STACK

A CMS area used to pass data between commands and programs.

STANDARD LABEL AREA

An area of DASD used to store label information.

STEPCAT

MVS description of Catalog to be used for a job step.

SPANNED

Records which span control intervals.

SPLIT

Action taken on a CI or CA for some record insertions (VSAM), or a file occupying a split cylinder (VTOC).

STRNO

Number of strings used.

SYSIN

SYStem INput unit for OS/MVS and CMS.

SYSIPT

SYStem InPuT unit for VSE.

SYSLST

SYStem LiST unit for VSE.

SYSPCH

SYStem PunCH unit for VSE.

SYSPRINT

SYStem PRINT unit for MVS.

SYSPUNCH

SYStem PUNCH unit for MVS.

TSO

Time Sharing Option

TUNE Block

CBLVCAT tuning block containing IDCAMS define recommendations.

USERCAT

VSAM USER CATalog.

VERIFY

IDCAMS command to reset a file's high used RBA.

VSAM

Virtual Storage Access Method

VSE

Virtual Storage Extended

VSE systems

Generic term for DOS, DOS/VS, VSE and VSE/ESA.

VSE/ESA

Virtual Storage Extended/Enterprise System Architecture

VTOC

Volume Table Of Contents

VVDS

VSAM Volume Data Set (used with BCS).

VVR

VSAM Volume Record (For a VVDS).

XA

EXtended Architecture (MVS).

Also from CBL

SELCOPY the Productivity Aid

From its inception as a SElect and COPY utility, **SELCOPY** has developed into an all purpose productivity aid, for **MVS**, **VM** and **VSE** users.

See the [CBL web site](#) for more detailed information on SELCOPY.

The Multiple Utility

The same simple free format control cards rationalize **all file to file utilities** under one program. Capable not only of multiple input, output and printing, but also selective modification, and all at the same time. Conversion includes ASCII, EBCDIC and Hex representation as well as arithmetic. Printing choice includes Char, Hex, Both, Mixed, Dump, or Report. Alternatively, you may convert some fields, rearrange them, and print a subset.

The Trouble Shooter

Simple, quickly written code will scan files for problem records. Having checked the scope of the errors, equally simple code can be used to correct the files.

File Format Conversion

Changing Fixed, Variable, Undefined and reblocking is just the beginning. SELCOPY may be used to restructure **any non-IBM file** into standard IBM format.

Test Data Generator

Generated data is controlled at the **field level**, with range controls on all data types in conjunction with all SELCOPY's selection logic.

Test files may thus be generated from nothing, or from a controlled selection of records from existing files with controlled regeneration of selected fields.

VSAM Usage

SELCOPY contains the full complement of VSAM facilities, such as Update in place, Keyed Read, Sequential Read, (both backwards & forwards), Insert and Delete. Such facilities are coupled with SELCOPY logic and its variety of input and output files, using the same simple syntax.

Back-Up and Restore

During your regular back-up run, you can code SELCOPY to give a useful **small report** on what it has backed up. Print the number of each type of record for example.

SELCOPY can back-up many totally separate files, VSAM or other, even off different volumes, concatenating them together to **one single file** on tape, while still keeping it logically processable.

The VM/CMS Environment

Read/Write/Update CMS files with native CMS I/O (FSREAD and FSWRITE). Read Sequential files and Read/Write/Update VSAM files, on **VSE** and **MVS** disks linked to your **CMS** id.

Unique to SELCOPY is its **Keyed** Read for CMS on files which are in sequence on some field within the record (RECFM V as well as F).

Multi-File Scanning

Scan all members of an **MVS PDS**, searching for a string, report and optionally **modify** and update-in-place. Input could equally be a generic group of **VSE** library members or **CMS** files, but for **VSE**, a second step is required to submit updates to **LIBR**.

ADABAS

SELCOPY supports the **ADABAS** database.

IMS and DL1 Usage

Insert, Delete, Replace, Sequential Read, Qualified Read, with **full DL1 syntax** for qualifiers, is provided with the customary SELCOPY simplicity.

The TSO Environment

Just ALLOC for your files and use the full range of SELCOPY's **MVS** facilities. Run conversationally using WTO with the REPLY function. For standard procedures, run from **CLISTs** or **REXX** allowing variables to be passed to SELCOPY on the invoking command line.

Speed of Execution

SELCOPY is written in Assembler, so is able to minimise linkage to I/O routines, but still uses **standard IBM Data Management**. This has the double advantage that it maximises speed while keeping up-to-date with IBM development, and at the same time avoids channel monopoly locking out other users.